

## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Vachaspati –  
Ayurveda Samhita evum Siddhant  
(M.D. (Ayurveda) - Compendium and Basic Principles)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Vachaspati – Ayurveda Samhita evum Siddhant (M.D. (Ayurveda) - Compendium and Basic Principles)

### 2.2 Objectives:

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

## **2.9 Teaching learning methods**

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## **2.10 Content of each subject in each year**

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**

**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
- 5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati  
Aushadhi-yog Parikshana Paddhati  
Swastha, Atura Pariksha Paddhati  
Dashvidha Parikshya Bhava  
Tadvidya sambhasha, vadmarga and tantrayukti
- 6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**
- 7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

  - a. Panchamahabhuta and tridosha.
  - b. Concepts of rasa, guna, virya, vipak, prabhav and karma
  - c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.
- 8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.
- 9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
- 10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**
- 11. Introduction to latest Trends in Drug Discovery and Drug Development**
  - Brief information on the traditional drug discovery process
  - Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
  - Brief introduction to the process of Drug development.
- 12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies

Randomized Controlled Trials (RCT) & their types

Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies –

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
National Pharmacovigilance Programme for ASU drugs.
14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

1. Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
2. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
3. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
4. Measures of Central tendency – Mean, Median and Mode.
5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
6. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
7. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
8. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete

**9. Measures of Central tendency – Mean, Median and Mode.**

**10. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation**

**11. Non parametric methods: Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)**

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.  
Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:**  
Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography: computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics**

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

**PRACTICAL**

**100 Marks**

**Teaching hours – 120**

**I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: <ul style="list-style-type: none"><li>• Thin-layer chromatography (TLC).</li><li>• Column chromatography (CC).</li><li>• Flash chromatography (FC)</li><li>• High-performance thin-layer chromatography (HPTLC)</li><li>• High Performance (Pressure) Liquid Chromatography (HPLC)</li><li>• Gas Chromatography (GC, GLC)</li></ul>
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology

	Familiarization and demonstration of techniques related to pharmacology and toxicology
<b>5</b>	Biochemistry (Clinical) Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
<b>6</b>	Clinical Pathology Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
<b>7</b>	Imaging Sciences Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
<b>8</b>	Clinical protocol development

## II. MEDICAL STATISTICS

**Practical hours - 20**

**Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.**

**Records to be prepared.**

**Distribution of marks (Practical):**

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

1. Aushotosh Kar "Pharmacognos & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
4. Kokate, CK., Purohit, AP, Gokhale, SB (2010). Pharmacognosy. Nirali Prakashan. Pune.

5. Kokate, CK., Khandelwal and Gokhale, SB (1996). Practical Pharmacognosy. Nirali Prakashan. Pune.
6. Trease G E and Evans W C, Pharmacognosy, Bailliere Tindall, Eastbourne, U K.
7. Tyler V C., Brady, L R., and Robers J E., Pharmacognosy, Lea and Febiger, Philadelphia.
8. Tyler VE Jr and Schwarting AE., Experimental Pharmacognosy, Burgess Pub. Co, Minneapolis, Minnesota.
9. Wallis- TE (2011)- reprint. Practical Pharmacognosy (Fourth Edition) Pharma Med Press, Hyderabad.
10. Wallis T E, Analytical Microscopy, J & A Churchill limited, London.
11. Wallis T E., Text Book of Pharmacognosy, J & A Churchill Limited, London.
12. WHO guidelines on good agricultural and collection practices- (GACP) for medicinal plants (2003). World Health Organization- Geneva.
13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1 to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
2. Brain, KR and Turner, TD. (1975). The Practical Evaluation Phytopharmaceuticals. Wright Sciencetechnica, Bristol.
3. Galen Wood Ewing (1985). Instrumental Methods of Chemical Analysis. McGraw- Hill College ; Fifth edition
4. Harborne, JB (1973). Phytochemistry Methods. Chapman and Hall, International Edition, London.
5. HPTLC- Fingerprint atlas of Ayurvedic Single Plant Drugs mentioned in Ayurvedic Pharmacopoeia Vol- III and IV. CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA. New Delhi.
6. Kapoor, RC (2010). Some observations on the metal based preparations in Indian System of Medicine. Indian Journal of Traditional Knowledge. 9(3): 562-575
7. Khopkar, S. M. Analytical Chemistry, New Age International Publishers , 3<sup>rd</sup> edition
8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
9. Mahadik KR, Bothara K G. Principles of Chromatography by, 1<sup>st</sup> edition, Nirali Prakashan.
10. Qadry JS and Qadry S Z., Text book of Inorganic Pharmaceutical and Medicinal Chemistry, B. S. Shah Prakashan, Ahmedabad.
11. Quality Control Methods for Medicinal Plant Material. Reprint (2002). WHO Geneva.
12. Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)

15. Stahl E., Thin Layer Chromatography - A Laboratory Handbook, Springer Verlag, Berlin.
16. Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo and Dev Dutt Rakesh (2008). Extraction Technologies for Medicinal and Aromatic Plants INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste

### **Biochemistry and Laboratory techniques:**

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
3. David Frifelder. W. H. Freeman. (1982). Physical Biochemistry by; 2 edition
4. David Sultan (2003). Text book of Radiology and Imaging, Vol-1, 7th Edition.
5. Deb, A.C., Fundamentals of Biochemistry, Books and Allied (P) Ltd, 2002.
6. Harold Varley. Practical Clinical Bio-chemistry
7. Kanai L.Mukherjee. Clinical Pathology:, Medical Laboratory Technology Vol. I.Tata McGrawHill 1996, New Delhi.
8. Gradwohl, Clinical Laboratory-methods and diagnosis, Vol-I
9. Clinical Biochemistry -Sabitri Sanyal, Clinical Pathology, B.I.Churchill Livingstone (P) Ltd, New Delhi.2000.
10. Satyanarayanan,U. Essentials of Biochemistry, Books and allied(P) Ltd.2002
12. Zubay, G.L. Biochemistry, W.M.C. Brown Publishers, New York 1998.
13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
3. Altick and Fenstermaker. (2007). *The Art of Literary Research*. 4th ed. W. W. Norton. Castle, Gregory. *Blackwell Guide to Literary Theory*. Blackwells,
4. Bowling, A. (2002). Research Methods in Health (2nd ed). Buckingham: Open University Press.
5. Day R.A. How to write a scientific paper. Cambridge University Press.
6. Cooray P.G. Guide to scientific and technical writing.
7. Deepika Chawla and Neena Sondhi. (2011). Research Methods- Concepts and cases. New Delhi: Vikas Publishing House.
8. Greenhalgh, T. (2006) How to Read a Paper: The Basics of Evidence-Based Medicine. (3rd ed) Blackwell
9. Kothari - CR (2004). Research Methodology- Methods and Techniques (Second Revised Edition). New Age International Publishers- New Delhi.
10. Kumar, R. 2005. *Research Methodology: a Step-by-Step Guide for Beginners*, 2<sup>nd</sup> ed. Thousand Oaks, CA, London: Sage Publications.
11. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
12. Relevant portions of Ayurvedic Samhitas and other texts

## Drug research and development:

1. RICK NG, (2009). DRUGS-from discovery to approval. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
3. Jagdeesh, Sreekant Murthy, Gupta, YK and Amitabh Prakash Eds. Biomedical Research (From Ideation to Publication) (2010). Wolters Kluwer/ Lippincott Williams and Wilkins.
4. WHO Guidelines on Safety Monitoring of herbal medicines in pharmacovigilance systems. (2004). WHO- Geneva. ISBN 92 4 1592214.
5. Natural products isolation. (2006) 2nd ed. / edited by Satyajit D. Sarker, Zahid Latif, Alexander I. Gray. (Methods in biotechnology; 20). Includes bibliographical references and index. Humana Press Inc. ISBN 1-58829-447-1 (acid-free paper) – ISBN 1-59259-955-9 (eISBN)
6. Gazette Extraordinary Part- II-Section 3 - Sub section (i) December 2008. Govt of India. AYUSH Guidelines on safety studies- Rule 170 of Drugs and Cosmetics Act.
7. OECD (2000) Guidance Document on Acute Oral Toxicity. Environmental Health and Safety Monograph Series on Testing and Assessment No 24.
8. OECD Guideline for the Testing of Chemicals – Repeated Dose 90-day Oral Toxicity Study in Rodents, 408, 1998.  
<http://browse.oecdbookshop.org/oecd/pdfs/free/9740801e.pdf>(latest version)
9. OECD Series on Principles of Good Laboratory Practice (GLP) and Compliance Monitoring, 1998.  
[http://www.oecd.org/document/63/0,2340,en\\_2649\\_34381\\_2346175\\_1\\_1\\_1,00.html](http://www.oecd.org/document/63/0,2340,en_2649_34381_2346175_1_1_1,00.html)
10. ICH Harmonised Tripartite Guideline (2000). Maintenance of the ICH Guideline on Non-clinical Safety Studies for the conduct of Human Clinical Trials for Pharmaceuticals M3 (R1).
11. Ghosh M.N.: Fundamentals of Experimental Pharmacology, *Scientific Book Agency. Bombay.*
12. Jaju B.P.: Pharmacological Practical Exercise Book, *Jaypee Brothers, New Delhi.*
13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
14. Ravindran R.: X-Pharm (Software), Indian Journal of Pharmacology, *JIPMER, Pondicherry.*

## Biotechnology and Bio-informatics:

1. Angela M. Meireles A (2009). Extracting Bioactive compounds for food products. Theory and applications. CRC- Press Taylor and Francis Group.
2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978- 81-8318-831-9
4. Lesk, A.M. Introduction to Bioinformatics Oxford 2002.

5. Satyanarayana, U.: Biotechnology, Books and Allied (P) Ltd, Kolkata, 2005
6. Setubal J. C and J. Meidanis, Introduction to Computational Molecular Biology, PWS Publishing Company, 1997.
7. <http://www.iitb.ac.in/~crnts>.
8. <http://www.zygogen.com>.
9. <http://www.dsir.nic.in/reports/tifp/database/metallo.pdf>.
10. [www.consort-statement.org](http://www.consort-statement.org)
11. [www.strobe-statement.org](http://www.strobe-statement.org)
12. [www.icmr.nic.in](http://www.icmr.nic.in)

### **Clinical Evaluation:**

1. CDSCO, Good Clinical Practices For Clinical Research in India, Schedule Y (Amended Version – 2005), <http://cdsco.nic.in/html/GCP1.html>
2. Ethical Guidelines for Biomedical Research on Human subjects. (2000). Indian Council of Medical Research- New Delhi.
3. Gallo P., Chuang-Stein C., Dragalin V., Gaydos B., Krams M., Pinheiro J. Adaptive Designs in Clinical Drug Development—An Executive Summary of the PhRMA Working Group. *Journal of Biopharmaceutical Statistics*. 16: 275–283; 2006
4. Good Clinical Practices- (2001). Guidelines for Clinical Trial on Pharmaceutical Products in India. Central Drugs Standard Control Organization. Directorate General of Health Services. New Delhi. (<http://WWW.cdsco.nic.in.ich.org>)
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6. ICH Harmonised Tripartite Guidelines for Good Clinical Practices.(1997)- Quintiles- Published by Brookwood Medical Publications. Richmond, Surrey. United Kingdom.
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8. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
9. William C. Scheffer Introduction to Clinical Researchs

### **Medical Statistics:**

1. Armitage, P. and Berry, G. (1994) Statistical Methods in Medical Research (3rd ed). Blackwell Science.
2. Armitage P, Berry G, Matthews JNS: *Statistical Methods in Medical Research*. Fourth edition. Oxford, Blackwell Science Ltd; 2002
3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
4. Bradford Hill – Basic Medical Statistics
5. Cambell, M.J. and Machin, D. (1993) Medical Statistics: A Common Sense Approach (2nd ed). Chester: Wiley.
6. Dwivedi S. N., Sundaram K. R and V. Sreenivas (2009). Medical Statistics -

- Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
7. Gupta S.P. - Fundamentals of statistics, Sultan Chand. Delhi.
  8. Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India
  9. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
  10. Mehdi, B and Prakash A. (2010). Biostatistics in Pharmacology. Practical Manual in experimental and clinical pharmacology. 1st Edition. New-Delhi: Jaypee brothers Medical Publishers
  11. Rao, NSN and Murthy, NS. (2008) 2nd Edition. Applied statistics in health sciences. Jaypee Brothers Medical Publishers (P) Ltd. Bengaluru, New Delhi.
  12. Rick J Turner and Todd A Durham (2008). Introduction to Statistics in Pharmaceutical Clinical trails. Published by the Pharmaceutical Press- An imprint of RPS Publishing, 1 Lambeth High Street, London SE1 7JN, UK
  13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
  14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
  15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana – A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.D.-AYURVEDA PRELIMINARY**

#### **AYURVEDA SAMHITA EVUM SIDDHANT (Compendium and Basic Principles)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

**PART A**

**50 Marks**

1. Learning and Teaching methodology available in Samhita- Tantrayukti, Tantraguna, Tantradosha, Tachchilya, Vadamarga, Kalpana, Arthashraya, Trividha Gyanopaya, teaching of Pada, Paada, Shloka, Vakya, Vakyartha, meaning and scope of different Sthana and Chatushka of Brihatrayee.
2. Manuscriptology - Collection, conservation, cataloguing, Critical editing through collation, receion (A critical revision of a text incorporating the most plausible elements found in varying sources), emendation (changes for improvement) and textual criticism (critical analysis) of manuscripts. Publication of edited manuscripts.
3. Concept of Bija chatustaya (Purush, Vyadhi, Kriyakaal, Aushadha according to Sushrut Samhita).
4. Introduction and Application of Nyaya (Maxims) - Like Shilaputrak Nyaya,

Kapinjaladhikaran Nyaya, Ghunakshara Nyaya, Gobalivarda Nyaya, Naprishtah Guravo Vadanti Nyaya, Shringagrahika Nyaya, Chhatrino Gacchhanti Nyaya, Shatapatrabhedana Nyaya, Suchikatah Nyaya.

5. Importance and utility of Samhita in present era.
6. Importance of ethics and principles of ideal living as mentioned in Samhita in the present era in relation to life style disorders.
7. Interpretation and co-relation of basic principles with contemporary sciences.

## **PART B**

**50 Marks**

1. Definition of Siddhanta, types and applied examples in Ayurveda.
2. Ayu and its components as described in Samhita.
3. Principles of Karana-Karyavada, its utility in advancement of research in Ayurveda.
4. Theory of Evolution of Universe (Srishti Utpatti), its process according to Ayurveda and Darshana.
5. Importance and utility of Triskandha (Hetu, Linga, Aushadh) and their need in teaching, research and clinical practice.
6. Applied aspects of various fundamental principles: Tridosha, Triguna, Purusha and Atmanirupana, Shatpadartha, Ahara-Vihara. Scope and importance of Pariksha (Pramana).
7. Importance of knowledge of Sharir Prakriti and Manas Prakriti.
8. Comparative study of Principles of Ayurveda and Shad Darshanas.

## **PRACTICAL**

**100 Marks**

### **Distribution of Marks:**

Topic presentation	- 20 Marks
Long case	- 20 Marks
Case Record	- 20 Marks
Compilation	- 20 Marks
Viva	- 20 Marks
<b>Total</b>	<b>- 100 Marks</b>

### **Reference Books:-**

1	Charak Samhita	Chakrapani commentary
2	Sushrut Samhita	Dalhana Commentary
3	Ashtanga Samgraha	Indu commentary
4	Ashtanga Hridaya	Arundutta and Hemadri commentary
5	Vaisheshika Darshan	Prashastapada Bhasya
6	Nyaya Darshan	Vatsyayan Bhasya Patanjala
7	Yoga Darshan	Vyas Bhasya
8	Vedantsara	
9	Sarvadarshan Samgraha	
10	Bhartiya Darshan	Baldev Upadhyaya

11	Ayurved Darshanam	Acharya Rajkumar Jain
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### Additional Books for Reference

1. Ashtangahrdaya Sutrasthana – Vol I & II – Dr. T. Sreekumar
2. Moulika Sidhanta - Dr. T. Sreekumar
3. Caraka Samhita – Sutrasthana - Dr. T. Sreekumar
4. Ashtangahrdaya Sutrasthana – Hridayabodhika Commentry - Dr. T. Sreekumar
5. Ashtangahrdaya – Uttarasthana – Kairali Commentary - Dr. T. Sreekumar
6. A Textbook of Ayurvedeeya Padarthavijnanam & Ayurveda Itihasam - Prof. C. R. Agnives
7. Ayurvedeeya Padartha vijnanam (Philosophy and Terminology of Ayurveda)  
– Prof. C. R. Agnives
8. Tridosha theory - Dr. V. V. S. Sastry
9. Rasavaisheshika - K. Raghavan Thirumulpad
10. Glossary of clinical symptoms in Ayurveda - Dr. E. Surendran
11. Clinical Application of Dosha Assessment - Arya Vaidya Sala, Kottakkal
12. Rasabhediya-Redefined - Arya Vaidya Sala, Kottakkal
13. Doshabhediya-redfined - Arya Vaidya Sala, Kottakkal
14. Agni - Ayurvedic Concept and Application - Arya Vaidya Sala, Kottakkal
15. Essentials of Padarthavijnana - Dr. Vinodkumar M V

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### M.D.- AYURVEDA FINAL YEAR

#### AYURVEDA SAMHITA EVUM SIDDHANT (Compendium and Basic Principles)

#### PAPER - I

#### CHARAK SAMHITA

100 Marks

1. Charak Samhita complete with Ayurved Dipika commentary by Chakrapani.
2. Introductory information regarding all available commentaries on Charak Samhita

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#### PAPER – II

#### SUSHRUT SAMHITA & ASHTANG-HRIDAYAM

100 Marks

1. Sushrut Samhita Sutra sthana and Sharir- sthana. with Nibandha Samgraha commentary by Acharya Dalhana.
2. Ashtang-Hridayam Sutra Sthanamatram with Sarvanga Sundara commentary by Arun Dutt.
3. Introductory information regarding all available commentaries on Sushrut Samhita and Ashtang Hridaya.

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**PAPER - III****AYURVEDIYA AND DARSHANIKA SIDDHANTA****100 Marks**

Introduction and description of philosophical principles incorporated in Charak Samhita, Sushrut Samhita, Ashtanga Hridya, shtang Samgraha.

1. Analysis of principles specially loka-purusha samya, Shadpadartha, Praman, Srishti Utpatti, Panchmahabhuta, Pilupaka, Pitharpaka Karana- Karyavada, Tantrayukti, Nyayas (Maxims), Atmatatva siddhant.
2. Importance of Satkaryavad, Arambhavada, Parmanuvada Swabhavoparamvada, Swabhava Vada, Yadricha Vada, Karmvada.
3. Practical applicability principles of Samkhya- Yoga, Nyaya-Vaisheshika, Vedanta and Mimansa.

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**PAPER – IV****AYURVED ITIHAS AND PRAYOGIKA SIDDHANT****100 Marks**

1. Post independent Development of Ayurveda: Education, Research.
2. Globalisation of Ayurved.
3. Introduction of department of AYUSH, CCIM, CCRAS, RAV.
4. Tridosh Siddhant.
5. Panchabhautik Siddhant
6. Manastatva and its Chikitsa Siddhant.
7. Naishthiki Chikitsa.
8. Practical applicability principles of Charvak, Jain & Bauddha Darshana.
9. Journals, types of Journals review of Articles.

**# Explanatory Note**

1. Comparative study of the Samprapti & Chikitsa Sootra mentioned by Brihatrayee of following disises – Jvara, Raktpitta, Gulma, Prameha, Kushta, Shosha, Unmada, Apasmar, Atisara, Grahni, Vatrakta, Aamvata, Shwasa-Kasa, Pandu-Kamla, Urustambha, Vatavyadhi, Shotha, Udararoga, Yakshma.
2. Critical analysis and applied study of the following concepts – Triguna, Tridosha, Panchamahabhuta, Prakrtisamsaveta & Vikrativishamsamveta, Sharira & Manas Prakruti, Sama-Nirama, Agni, Ojus, Vyadhikshamatva, Vikarvighatbhavabhava, Kalakalmrtyu, Ahara-Vihara, Pathyapathya, Satmyaasatmya, Nidanarthakarroga, Shadavidhakriyakal, Ashtatrika, Shadaupakrama, Daiva-drishta, Punrjanma, Anubandha Chatushtya, (comparative study of above concepts from Brihatrayee, Laghutrayee with available Sanskrit commentaries)
3. Introduction to Laghutrayee with available Sanskrit commentaries.

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**PRACTICALS**

Practical- Viva-voce

- 100 Marks

(50 case sheets are to be filled from samhita siddhant IPD / OPD)

### **Distribution of Marks:**

1. Long case	- 20 Marks
2. Short topic Presentation	- 20 Marks
3. Record	- 10 Marks
4. Presentation of Thesis	- 10 Marks
5. Microteaching	- 10 Marks
6. Viva	- 30 Marks
<b>Total</b>	<b>- 100 Marks</b>

### **REFERENCE BOOKS:**

1. Charak Samhita with Chakrapani commentary
2. Sushruta Samhita with Dalhana Commentary
3. Ashtanga Samgraha with Sarvangsundara
4. Ashtanga Hridaya with Sarvangasundara
5. Vaisheshika Darshan - Prashastapada Bhasya
6. Nyaya Darshan - Vatsyayan Bhasya Patanjala
7. Yoga Darshan - Vyas Bhasya
8. Vedantsara
9. Sarvadarshan Samgraha
10. Bhartiya Darshan - Baldev Upadhyaya.
11. Ayurved Darshanam - Acharya Rajkumar Jain.
12. Ayurved Darshan Vimarsha - Dr O.P. Upadhyay.
13. Ayurvediy Jeevak Su - Dr O.P. Upadhyay.
14. Padartha Vidnyan - Dr O.P. Upadhyay.
15. Scientific Exploration of Ayurved – Dr. Sudhir Kumar.

### **Additional Books for Reference**

1. Ashtangahrdaya Sutrasthana – Vol I & II – Dr. T. Sreekumar
2. Moulika Sidhanta - Dr. T. Sreekumar
3. Caraka Samhita – Sutrasthana - Dr. T. Sreekumar
4. Ashtangahrdaya Sutrasthana – Hridayabodhika Commentry - Dr. T. Sreekumar
5. Ashtangahrdaya – Uttarasthana – Kairali Commentary - Dr. T. Sreekumar
6. A Textbook of Ayurvedeeya Padarthavijnanam & Ayurveda Itihasam - Prof. C. R. Agnives
7. Ayurvedeeya Padartha vijnanam (Philosophy and Terminology of Ayurveda)  
– Prof. C. R. Agnives
8. Tridosha theory - Dr. V. V. S. Sastry
9. Rasavaisheshika - K. Raghavan Thirumulpad
10. Glossary of clinical symptoms in Ayurveda - Dr. E. Surendran
11. Clinical Application of Dosha Assessment - Arya Vaidya Sala, Kottakkal
12. Rasabhediyam-Redefined - Arya Vaidya Sala, Kottakkal
13. Doshabhediyam-redfined - Arya Vaidya Sala, Kottakkal
14. Agni - Ayurvedic Concept and Application - Arya Vaidya Sala, Kottakkal
15. Essentials of Padarthavijnana - Dr. Vinodkumar M V

**2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

**2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

**2.13 Records**

Relevant records are to be maintained

**2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.
3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.
4. For approving the title a scrutiny Committee shall be constituted by the University.
5. The University should display the approved synopsis of dissertation on their website.
6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.
7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.
9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.
10. The dissertation shall consist critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.
11. The dissertation shall consist of not less than forty thousand words.
12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.

13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.

14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.

15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.

16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.

17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.

18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

**2.20 Journals**

**Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941

12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamy@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

#### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277

16. Health Sciences -*healthsciences.ac.in*/Open Access Peer Reviewed E-Journal. Kerala University of Health Sciences, Thrissur.

#### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

### **3. EXAMINATIONS**

#### **3.1 Eligibility to appear for examinations [including Supplementary]**

A. Preliminary examination:

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

B. Final examination:

For appearing final year examination 80 % attendance in each theory and practical subjects in 2 nd & 3 rd years separately is required

#### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

#### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

##### **Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

##### **Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

## **SCHEDULE OF EXAMINATIONS**

- a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.
- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

## **CONDUCT OF EXAMINATION**

1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.
3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

## **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.  
The pattern is long essay for 20 marks -one question  
Short essay 10 marks - Eight questions  
Total 9 questions for 100 marks

### **3.4 Papers in each year**

Given under clause No.2.10

### **3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

### **3.6 Model question paper for each subject with question paper pattern**

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Ayurved Samhita evum Siddhant)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe scope and importance of different types of Pariksha in Rogi and Roga

**Short Essays**

**(8x10=80)**

2. Explain Siddhanta and its classifications with suitable examples
3. Enumerate Vadamargas and describe any five of them with examples
4. Explain the concept of Bijachatushtaya
5. Explain the methods of preservation, edition and publication of manuscript
6. Explain any five Nyayas (maxims) and their application in Ayurveda
7. Explain Thridosha Siddhanta and its applied aspects
8. Describe the concept of Prakriti and explain the physical and mental features of Sleshma prakriti individual
9. Criticize Srishti utpattikrama in different Darsanas and Charaka Samhita

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Ayurved Samhita evum Siddhant)  
(..... scheme)**

**Paper I – Charak Samhita**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Enumerate gunas according to Charaka. Discuss their importance in health, disease and treatment.

**Short Essays**

**(8x10 = 80)**

2. Explain sareeravridhikarabhavas, balavridhikarabhavas and Aharaparinamakarabhava.
3. Criticize panchasan mahakashayas and its practical utility.
4. Define yuktipramana and explain its utility in research.
5. Discuss the etiology and preventive measures of janapadodhwamsa vyadhis
6. Write the premonitory symptoms of jwara and line of treatment. Explain the importance of ghrita in jwara.
7. Explain the importance of jataragni and its derangement in the manifestation of grahaniroga.
8. Write a description about the commentary Ayurveda Deepika and its author.
9. Describe the factors to be examined to determine residual span of life.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Ayurved Samhita evum Siddhant)  
(..... scheme)**

**Paper II – Susrut Samhita & Ashtang Hridayam**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Analyze the samanya upakrama of Tridoshas based on their gunas and basic constitution.

**Short Essays**

**(8x10 = 80)**

2. Explain Jagat karanavada according to Susruta Samhita.
3. Describe Bija chatustaya.
4. Criticize the treatment principle in Asthi kshaya.
5. Discuss Vichitra pratyayarabdha and Prabhava.
6. Criticize the concept of Ojus and Vyadhikshamatwa.
7. Write the classification of diseases according to Susruta Samhita.
8. Describe Srishtyutpatti krama according to Susruta Samhita.
9. Describe the commentary NibandhaSamgraha and its author.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Ayurved Samhita evum Siddhant)  
(..... scheme)**

**Paper III – Ayurvediya and Darshanika Siddhanta**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Discuss and compare the concept of miseries (Dukha) in Samkhya darsana and Ayurveda.

**Short Essays**

**(8x10 = 80)**

2. Discuss Atma according to Ayurveda and Darsanas.
3. Which are padarthas of Vaiseshika darsana? Discuss how they are utilized in Ayurveda.
4. Describe Lokapurusha samyavada and the benefits of its knowledge.
5. Describe the important principles of Yogadarsana.
6. Criticize Avasthapaka and Nishtapaka with Pilupaka and Pitarapaka.
7. Write the pramanas accepted in Shad darsanss and Ayurveda.
8. Enumerate Tantrayuktis and their utility in understanding Ayurveda Samhitas.
9. Explain shodasa padarthas of Nyaya darsana.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Ayurved Samhita evum Siddhant)  
(..... scheme)**

**Paper IV – Ayurved Itihas and Prayogika Siddhant**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Criticize the application of Panchamahabhuta Siddhanta and Tridosha Siddhanta in the treatment principles of Ayurveda.

**Short Essays**

**(8x10 = 80)**

2. Describe manas in Ayurveda and its role in jnanotpatti,
3. Describe the important principles of Charvaka darsana.
4. Discuss post-independent development of Ayurveda in the field of education and research.
5. Criticize the factors which have helped in the globalization of Ayurveda.
6. Explain the influence of Baudha darsana in Ayurveda.
7. Describe the development of Ayurveda through CCIM and AYUSH.
8. Discuss the principles of Jaina darsana and illustrate Syat vada.
9. Discuss Tridosha siddhanta in the light of contemporary science.

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

**3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners

should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

### **4. INTERNSHIP**

Not applicable

### **5. ANNEXURES**

#### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended

for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study
7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman
8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.

12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

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## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Vachaspati – Kriya Sharira  
(M.D. (Ayurveda) - Physiology)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Vachaspati – Kriya Sharira (M.D. (Ayurveda) - Physiology)

### 2.2 Objectives:

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

## 2.9 Teaching learning methods

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## 2.10 Content of each subject in each year

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**  
**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
- 5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati  
Aushadhi-yog Parikshana Paddhati  
Swastha, Atura Pariksha Paddhati  
Dashvidha Parikshya Bhava  
Tadvidya sambhasha, vadmarga and tantrayukti
- 6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**
- 7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

  - a. Panchamahabhuta and tridosha.
  - b. Concepts of rasa, guna, virya, vipak, prabhav and karma
  - c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.
- 8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.
- 9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
- 10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**
- 11. Introduction to latest Trends in Drug Discovery and Drug Development**
  - Brief information on the traditional drug discovery process
  - Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
  - Brief introduction to the process of Drug development.
- 12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies

Randomized Controlled Trials (RCT) & their types

Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies –

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
National Pharmacovigilance Programme for ASU drugs.
14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

1. Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
2. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
3. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
4. Measures of Central tendency – Mean, Median and Mode.
5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
6. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
7. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
8. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete

**9. Measures of Central tendency – Mean, Median and Mode.**

**10. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation**

**11. Non parametric methods: Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)**

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.  
Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:**  
Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography: computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics**

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

**PRACTICAL**

**100 Marks**

**Teaching hours – 120**

**I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and

	toxicology
5	<p>Biochemistry (Clinical)</p> <p>Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry.</p> <p>Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques.</p> <p>Interpretation of the results obtained in the light of the data on normal values.</p>
6	<p>Clinical Pathology</p> <p>Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab.</p> <p>Auto cell counter, urine analyzer, ESR, microscopic examination of urine.</p>
7	<p>Imaging Sciences</p> <p>Familiarization and demonstration of techniques related to the imaging techniques.</p> <p>Video film demonstration of CT-Scan, MRI-scan and PET-scan.</p>
8	Clinical protocol development

## II. MEDICAL STATISTICS

**Practical hours - 20**

**Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.**

**Records to be prepared.**

**Distribution of marks (Practical):**

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

**BOOKS:-**

**Pharmacognosy:**

1. Aushotosh Kar "Pharmacognos & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
4. Kokate, CK., Purohit, AP, Gokhale, SB (2010). Pharmacognosy. Nirali Prakashan. Pune.
5. Kokate, CK., Khandelwal and Gokhale, SB (1996). Practical Pharmacognosy. Nirali Prakashan. Pune.

6. Trease G E and Evans W C, Pharmacognosy, Bailliere Tindall, Eastbourne, U K.
7. Tyler V C., Brady, L R., and Robers J E., Pharmacognosy, Lea and Febiger, Philadelphia.
8. Tyler VE Jr and Schwarting AE., Experimental Pharmacognosy, Burgess Pub. Co, Minneapolis, Minnesota.
9. Wallis- TE (2011)- reprint. Practical Pharmacognosy (Fourth Edition) Pharma Med Press, Hyderabad.
10. Wallis T E, Analytical Microscopy, J & A Churchill limited, London.
11. Wallis T E., Text Book of Pharmacognosy, J & A Churchill Limited, London.
12. WHO guidelines on good agricultural and collection practices- (GACP) for medicinal plants (2003).World Health Organization- Geneva.
13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1 to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
2. Brain, KR and Turner, TD. (1975). The Practical Evaluation Phytopharmaceuticals. Wright Sciencetechnica, Bristol.
3. Galen Wood Ewing (1985). Instrumental Methods of Chemical Analysis. McGraw- Hill College ; Fifth edition
4. Harborne, JB (1973). Phytochemistry Methods. Chapman and Hall, International Edition, London.
5. HPTLC- Fingerprint atlas of Ayurvedic Single Plant Drugs mentioned in Ayurvedic Pharmacopoeia Vol- III and IV. CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA. New Delhi.
6. Kapoor, RC (2010). Some observations on the metal based preparations in Indian System of Medicine. Indian Journal of Traditional Knowledge. 9(3): 562-575
7. Khopkar, S. M. Analytical Chemistry, New Age International Publishers , 3 rd edition
8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
9. Mahadik KR, Bothara K G. Principles of Chromatography by, 1st edition, Nirali Prakashan.
10. Qadry JS and Qadry S Z., Text book of Inorganic Pharmaceutical and Medicinal Chemistry, B. S. Shah Prakashan, Ahmedabad.
11. Quality Control Methods for Medicinal Plant Material. Reprint (2002). WHO Geneva.
12. Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
15. Stahl E., Thin Layer Chromatography - A Laboratory Handbook, Springer Verlag, Berlin.

16. Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo and Dev Dutt Rakesh (2008). Extraction Technologies for Medicinal and Aromatic Plants INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste

### **Biochemistry and Laboratory techniques:**

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
3. David Frifelder. W. H. Freeman. (1982). Physical Biochemistry by; 2 edition
4. David Sultan (2003). Text book of Radiology and Imaging, Vol-1, 7th Edition.
5. Deb, A.C., Fundamentals of Biochemistry, Books and Allied (P) Ltd, 2002.
6. Harold Varley. Practical Clinical Bio-chemistry
7. Kanai L.Mukherjee. Clinical Pathology:, Medical Laboratory Technology Vol. I.Tata McGrawHill 1996, New Delhi.
8. Gradwohl, Clinical Laboratory-methods and diagnosis, Vol-I
9. Clinical Biochemistry -Sabitri Sanyal, Clinical Pathology, B.I.Churchill Livingstone (P) Ltd, New Delhi.2000.
10. Satyanarayanan,U. Essentials of Biochemistry, Books and allied(P) Ltd.2002
12. Zubay, G.L. Biochemistry, W.M.C. Brown Publishers, New York 1998.
13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
3. Altick and Fenstermaker. (2007). *The Art of Literary Research*. 4th ed. W. W. Norton. Castle, Gregory. *Blackwell Guide to Literary Theory*. Blackwells,
4. Bowling, A. (2002). Research Methods in Health (2nd ed). Buckingham: Open University Press.
5. Day R.A. How to write a scientific paper. Cambridge University Press.
6. Cooray P.G. Guide to scientific and technical writing.
7. Deepika Chawla and Neena Sondhi. (2011). Research Methods- Concepts and cases. New Delhi: Vikas Publishing House.
8. Greenhalgh, T. (2006) How to Read a Paper: The Basics of Evidence-Based Medicine. (3rd ed) Blackwell
9. Kothari - CR (2004). Research Methodology- Methods and Techniques (Second Revised Edition). New Age International Publishers- New Delhi.
10. Kumar, R. 2005. *Research Methodology: a Step-by-Step Guide for Beginners*, 2<sup>nd</sup> ed. Thousand Oaks, CA, London: Sage Publications.
11. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
12. Relevant portions of Ayurvedic Samhitas and other texts

### **Drug research and development:**

1. RICK NG, (2009). DRUGS-from discovery to approval. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
3. Jagdeesh, Sreekant Murthy, Gupta, YK and Amitabh Prakash Eds. Biomedical Research (From Ideation to Publication) (2010). Wolters Kluwer/ Lippincott Williams and Wilkins.
4. WHO Guidelines on Safety Monitoring of herbal medicines in pharmacovigilance systems. (2004). WHO- Geneva. ISBN 92 4 1592214.
5. Natural products isolation. (2006) 2nd ed. / edited by Satyajit D. Sarker, Zahid Latif, Alexander I. Gray. (Methods in biotechnology; 20). Includes bibliographical references and index. Humana Press Inc. ISBN 1-58829-447-1 (acid-free paper) – ISBN 1-59259-955-9 (eISBN)
6. Gazette Extraordinary Part- II-Section 3 - Sub section (i) December 2008. Govt of India. AYUSH Guidelines on safety studies- Rule 170 of Drugs and Cosmetics Act.
7. OECD (2000) Guidance Document on Acute Oral Toxicity. Environmental Health and Safety Monograph Series on Testing and Assessment No 24.
8. OECD Guideline for the Testing of Chemicals – Repeated Dose 90-day Oral Toxicity Study in Rodents, 408, 1998.  
<http://browse.oecdbookshop.org/oecd/pdfs/free/9740801e.pdf>(latest version)
9. OECD Series on Principles of Good Laboratory Practice (GLP) and Compliance Monitoring, 1998.  
[http://www.oecd.org/document/63/0,2340,en\\_2649\\_34381\\_2346175\\_1\\_1\\_1,00.html](http://www.oecd.org/document/63/0,2340,en_2649_34381_2346175_1_1_1,00.html)
10. ICH Harmonised Tripartite Guideline (2000). Maintenance of the ICH Guideline on Non-clinical Safety Studies for the conduct of Human Clinical Trials for Pharmaceuticals M3 (R1).
11. Ghosh M.N.: Fundamentals of Experimental Pharmacology, *Scientific Book Agency. Bombay.*
12. Jaju B.P.: Pharmacological Practical Exercise Book, *Jaypee Brothers, New Delhi.*
13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
14. Ravindran R.: X-Pharm (Software), Indian Journal of Pharmacology, *JIPMER, Pondicherry.*

### **Biotechnology and Bio-informatics:**

1. Angela M. Meireles A (2009). Extracting Bioactive compounds for food products. Theory and applications. CRC- Press Taylor and Francis Group.
2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978- 81-8318-831-9
4. Lesk, A.M. Introduction to Bioinformatics Oxford 2002.

5. Satyanarayana, U.: Biotechnology, Books and Allied (P) Ltd, Kolkata, 2005
6. Setubal J. C and J. Meidanis, Introduction to Computational Molecular Biology, PWS Publishing Company, 1997.
7. <http://www.iitb.ac.in/~crnts>.
8. <http://www.zygogen.com>.
9. <http://www.dsir.nic.in/reports/tifp/database/metallo.pdf>.
10. [www.consort-statement.org](http://www.consort-statement.org)
11. [www.strobe-statement.org](http://www.strobe-statement.org)
12. [www.icmr.nic.in](http://www.icmr.nic.in)

### **Clinical Evaluation:**

1. CDSCO, Good Clinical Practices For Clinical Research in India, Schedule Y (Amended Version – 2005), <http://cdsco.nic.in/html/GCP1.html>
2. Ethical Guidelines for Biomedical Research on Human subjects. (2000). Indian Council of Medical Research- New Delhi.
3. Gallo P., Chuang-Stein C., Dragalin V., Gaydos B., Krams M., Pinheiro J. Adaptive Designs in Clinical Drug Development—An Executive Summary of the PhRMA Working Group. *Journal of Biopharmaceutical Statistics*. 16: 275–283; 2006
4. Good Clinical Practices- (2001). Guidelines for Clinical Trial on Pharmaceutical Products in India. Central Drugs Standard Control Organization. Directorate General of Health Services. New Delhi. (<http://WWW.cdsco.nic.in.ich.org>)
5. Gupta, SK Ed. Basic Principles of Clinical Research and Methodology (2007). Jaypee Brothers- new Delhi
6. ICH Harmonised Tripartite Guidelines for Good Clinical Practices.(1997)- Quintiles- Published by Brookwood Medical Publications. Richmond, Surrey. United Kingdom.
7. NCI. *Clinical Trials Education Series*. <http://www.cancer.gov/clinicaltrials/learning/clinical-trials-education-series>, 2001.
8. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
9. William C. Scheffer Introduction to Clinical Researchs

### **Medical Statistics:**

1. Armitage, P. and Berry, G. (1994) Statistical Methods in Medical Research (3rd ed). Blackwell Science.
2. Armitage P, Berry G, Matthews JNS: *Statistical Methods in Medical Research*. Fourth edition. Oxford, Blackwell Science Ltd; 2002
3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
4. Bradford Hill – Basic Medical Statistics
5. Cambell, M.J. and Machin, D. (1993) Medical Statistics: A Common Sense Approach (2nd ed). Chester: Wiley.
6. Dwivedi S. N., Sundaram K. R and V. Sreenivas (2009). Medical Statistics -

- Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
7. Gupta S.P. - Fundamentals of statistics, Sultan Chand. Delhi.
  8. Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India
  9. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
  10. Mehdi, B and Prakash A. (2010). Biostatistics in Pharmacology. Practical Manual in experimental and clinical pharmacology. 1st Edition. New-Delhi: Jaypee brothers Medical Publishers
  11. Rao, NSN and Murthy, NS. (2008) 2nd Edition. Applied statistics in health sciences. Jaypee Brothers Medical Publishers (P) Ltd. Bengaluru, New Delhi.
  12. Rick J Turner and Todd A Durham (2008). Introduction to Statistics in Pharmaceutical Clinical trails. Published by the Pharmaceutical Press- An imprint of RPS Publishing, 1 Lambeth High Street, London SE1 7JN, UK
  13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
  14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
  15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana – A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.D.-AYURVEDA PRELIMINARY**

#### **KRIYA SHARIRA (Physiology)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

**PART A**

**50 Marks**

1. Theory of Loka-Purusha Samya
2. Theory of Panchamahabhuta
3. Physiological aspects of Samanya – Vishesh siddhanta
4. Concepts of Tridosha and Triguna
5. Concept of Dhatu
6. Concept of Mala
7. Description of Ojas
8. Process of Ahara Parinama including Aharaparinamakara Bhava and Asta Ahara Vidhi Visayatana
9. Physiological importance of Agni, its classification and functions
10. Dhatuposana theories
11. Concepts of Atma, Manas and Indriya.

12. Concepts of Prakriti and Ashtavidha Sara.
13. Concept of Srotas

## **PART B**

**50 Marks**

Description of essential and relevant understandings related to contemporary physiology, both general physiology and systemic physiology.

1. Essentials of cell physiology – organization of cell.
2. Membrane physiology- transport across cell membrane, action potentials and resting membrane potentials.
3. Homeostasis- negative and positive feedback mechanisms.
4. Genetic code, its expression and regulation of gene expression.
5. Essentials of cardiovascular physiology- cardiac cycle, regulation of heart rate and blood pressure.
6. Essentials of respiratory physiology- regulation of respiration-chemical and neural, gaseous exchange, transportation of gases.
7. Gastrointestinal physiology- various digestive juices and their actions, gastrointestinal hormones, enteric nervous system.
8. Nervous system physiology- ANS, somatic nervous system, reflexes, general and special sensations, higher mental functions, functions of brain, brainstem and spinal cord.
9. Blood: Blood cells-RBCs, WBCs, platelets, plasma proteins and immunity.
10. Muscle physiology: properties and mechanisms of contraction of skeletal, cardiac and smooth muscles.
11. Physiology of excretion- mechanism of urine formation, micturition.
12. Endocrine physiology: Classification of hormones, hormones secreted by pituitary, thyroid, parathyroid, adrenal glands, pineal, pancreas and their functions.
13. Study of male and female reproductive system: functions of reproductive hormones.

## **PRACTICAL**

**100 Marks**

### **Contents:**

#### **Ayurvedic practicals**

- Assessment of Prakriti
- Assessment of Sara
- Pramana Pariksha

#### **Hematology**

- Hemoglobin estimation
- Total RBC count
- Total WBC count
- Differential leukocyte count
- Packed cell volume (PCV) ESR
- Bleeding time Clotting time
- Blood grouping and Rh typing

#### **Urine examination –**

- Physical examination- Specific gravity and reaction of urine
- Chemical examination
- Albumin test

Sugar test  
Ketone bodies  
Bile salts and pigments

**Distribution of Marks (Practical):**

1. Laboratory Practical	- 20 Marks
2. Human Experiment	- 15 Marks
3. Spotting	- 15 Marks
4. Prakriti Saradi pariksha	- 20 Marks
5. Practical Record	- 10 Marks
6. Viva-voce	- 20 Marks
<b>Total</b>	<b>- 100 Marks</b>

**Reference Books:-**

1. Ayurvediya Kriyasharir	- Ranjit Rai Desai
2. Kayachikitsa Parichaya	- C. Dwarkanath
3. Prakrit Agni Vigyan	- C. Dwarkanath
4. Sharir Kriya Vigyan	- Shiv Charan Dhyani
5. Abhinava Sharir Kriya Vigyana	- Acharya Priyavrata Sharma
6. Dosha Dhatu Mala Vigyana	- Shankar Gangadhar Vaidya
7. Prakrita Dosha Vigyana	- Acharya Niranjana Dev
8. Tridosha Vigyana	- Shri Upendranath Das
9. Sharira Tatva Darshana	- Hirlekar Shastri
10. Prakrita Agni Vigyana	- Niranjana Dev
11. Deha Dhatvagni Vigyana	- Vd. Pt. Haridatt Shastri
12. Sharir Kriya Vigyana (Part 1-2)	- Acharya Purnchandra Jain
13. Sharir Kriya Vigyana	- Shri Moreshwar Dutta Vd.
14. Sharira Kriya Vijnana (Part 1-2)	- Nandini Dhargalkar
15. Dosha Dhatu Mala Vigyana	- Basant Kumar Shrimall
16. Abhinava Sharir Kriya Vigyana	- Dr. Shiv Kumar Gaur
17. Pragyogik Kriya Sharir	- Acharya P.C. Jain
18. Kaya Chikitsa Parichaya	- Dr. C. Dwarkanath
19. Concept of Agni	- Vd. Bhagwan Das
20. Purush Vichaya	- Acharya V.J. Thakar
21. Kriya Sharir	- Prof. Yogesh Chandra Mishra
22. Sharir Kriya Vigyana	- Prof. Jayaram Yadav & Dr. Sunil Verma
23. Basic Principles of Kriya-Sharir (A treatise on Ayurvedic Physiology) by	- Dr. Srikant Kumar Panda
24. Sharir Kriya – Part I & II	-Dr. Ranade, Dr. Deshpande & Dr. Chobhe
25. Human Physiology in Ayurveda	-Dr Kishor Patwardhan
26. Sharirkriya Vignyan Practical Hand Book	-Dr.Ranade, Dr.Chobhe, Dr. Deshpande
27. Sharir Kriya Part 1&2	-Dr.R.R.Deshapande, Dr.Wavhal
28. Textbook of Physiology	-Gyton & Hall
29. Review of medical physiology	-William Ganong
30. Essentials of Medical Physiology	-Sembulingam, K.

31. Concise Medical Physiology	-Chaudhari, Sujit. K.
32. Fundamental of Anatomy & Physiology	-Martini
33. Principals of Anatomy & Physiology	-Tortora & Grabowski
34. Human Physiology	-Richards, Pocock
35. Samson Wrights Applied Physiology, Keele, Neil, joels	
36. Brainstem Control of Wakefulness And Sleep	- Steriade, Mirce
37. An Introduction to Human Physiology	- Green, J.h.
38. Ancient Indian Medicine	- Kutumbiah P.
39. Biographical History of Indian Medicine	- Srikanthamurthy KR
40. Ayurveda Kriya Sharira	- Yogesh Chandra Mishra
41. Textbook of Medical Physiology	- Indu Khurana
42. Tridosha Theory	- Subrahmanya Shastri
43. Statistics in Medicine	- K. Syamalan

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### M.D.-AYURVEDA FINAL YEAR

#### KRIYA SHARIR (Physiology)

PAPER - I

DOSA-DHĀTU-MALA VIJÑĀNA

100 Marks

#### Contribution of different Ayurveda Samhita in Kriya Sharir

- Theory of Pancamahābhūta
- Principle of Loka-Purusa Sāmāya
- Importance of Sāmānya - Viśesa principle.
- Different views on the composition of Purusa and the importance of Cikitsya Purusa.
- Importance of Gurvādi Guna in Ayurveda.
- General description of Tridosa theory
- Mutual relationship between Triguna-Tridosa-Pancamahābhūta-Indriya.
- Mutual relationship between Rtu-Dosa-Rasa-Guna.
- Biological rhythms of Tridosa on the basis of Day-Night-Age-Season and Food intake.
- Role of Dosa in the formation of Prakṛti of an individual.
- Role of Dosa in maintaining health.
- **Vāta Dosa:** General locations (*Sthāna*), general attributes (*Guna*) and general functions (*Sāmānya Karma*). Five subdivisions of *Vāta* with their specific locations, specific properties, and specific functions (*Prāna, Udāna, Samāna, Vyāna, Apāna*)
- **Pitta Dosa:** General locations (*Sthāna*), general attributes (*Guna*) and general functions (*Sāmānya Karma*). Five subdivisions of *Pitta* with their specific locations, specific properties, and specific functions (*Pācaka, Ranjaka, Ālocaka, Bhrājaka, Sādhaka*). Similarities and differences between Agni and Pitta.
- **Kapha Dosa:** General locations (*Sthāna*), general attributes (*Guna*) and general functions (*Karma*) of Kapha. Five subdivisions of Kapha with their specific locations, specific properties, and specific functions (*Bodhaka, Avalambaka, Kledaka, Tarpaka, Ślesaka*).
- Applied physiology of Tridosa principle: *Kriyākāla, Dosa Vrddhi-Dosa Kṣaya*.

- **Dhātu Posana:** Process of nourishment of Dhātu. Description of various theories of Dhātu Posana (Ksīra-Dadhi, Kedārī-Kulya, Khale Kapota etc).
- **Dhātu:** General introduction and definition of Dhātu. Formation, Definition (Nirukti), Distribution, Attributes, quantity, classification, Pāñcabhautika composition and Functions of all seven Dhātus in detail: Rasa, Rakta, Māmsa, Meda, Asthi, Majjā, Śukra.
- **Applied physiology of Dhātu:** Manifestations of Ksaya and Vriddhi of each Dhātu. Description of Dhātu Pradosaja Vikāra.
- **Description of Āśraya and Āśrayī** kind of relationship between Dosa and Dhātu.
- **Description of the characteristic features of Astavidha Sāra.** Description of Rasavaha, Raktavaha, Māmsavaha, Medovaha, Asthivaha, Majjāvaha and Śukravaha Srotāmsi.
- **Ojas:** Definition, locations, synonyms, Formation, Distribution, Properties, Quantity, Classification and Functions of Ojas. Description of Vyādhiksamitva. Bala Vrddhikara Bhāva. Classification of Bala. Relation between Ślesmā, Bala and Ojas.
- **Applied physiology of Ojas:** Etiological factors and manifestations of Ojaksaya, Visramsas and Vyāpat. Physiological and clinical significance of Ojas.
- **Upadhātu:** General introduction and Definition of the term 'Upadhātu'. Formation, Nourishment, Quantity, Properties, Distribution and functions of each Upadhātu.
- **Stanya:** Characteristic features and methods of assessing Śuddha and Dūṣita Stanya, Manifestations of Vrddhi and Ksaya of Stanya.
- **Ārtava:** Characteristic features of Śuddha and Dūṣita Ārtava. Differences between Raja and Ārtava, physiology of Ārtavavaha Srotāmsi.
- **Study of Tvak**
- **Physiology of Mala** - Definition of the term 'Mala'. Definition, Formation, Properties, Quantity and Functions of Purīsa, Mutra. Manifestations of Vrddhi and Kshaya of Purīsa and Mūtra.
- **Sveda** – Definition, Formation, Properties, Quantity and Functions of Svedavaha Srotāmsi. Formation of Sveda. Manifestations of Vrddhi and Ksaya of Sveda.
- **Dhātumala** – Definition, Formation, properties, Quantity, Classification and Functions of each Dhātumala.

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PAPER – II

PRAKRTI- SATTVA VIJÑĀNA

100 Marks

- **Deha-Prakrti:** Various definitions and synonyms for the term 'Prakrti'. Factors influencing the Prakrti. Classification of Deha-Prakrti. Characteristic features of the individuals belonging to each kind of Deha-Prakrti. Recent advances in understanding the Prakrti.
- **Pancajnanendriya:** Physiological description of Pancajnanendriya and physiology of perception of Śabda, Sparśa, Rūpa, Rasa, Gandha. Indriya-panca-pancaka; Physiological description of Karmendriya.
- **Manas** – Definition, location (sthana), Properties, Functions and Objects of Manas.
- **Ātmā** – Definition, Properties of Ātmā. Difference between Paramātmā and Jīvātmā; Characteristic features of Ātmā.
- **Buddhi** – Location, Types, Functions of Buddhi; Physiology of Dhī, Dhṛti and Smṛti.
- **Nidrā** – Definition of Nidrā, Classification of Nidrā. Tandra, physiological and clinical significance of Nidra; Svapnotpatti and Svapnabheda.
- **Physiology of special senses.** Intelligence, Memory, Learning and Motivation.

- Physiology of sleep.
- Physiology of speech and articulation;
- Physiology of Pain and temperature.

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**PAPER - III**

**KOSTHANGA KRIYA VIJÑĀNA**

**100 Marks**

- Āhāra: Definition and significance of Āhāra. Classification of Āhāra. Āhāra-vidhi-vidhāna. Asta āhāra-vidhi viśesāyatana, Āhāraparināmakara bhāva.
- Āhārpāchana: Āhāra Pāka Prakriyā, Description of Annavaha Srotās. Description of Avasthāpāka and Nishthapāka. Role of dosha in Āhārapāka. Sāra and Kitta Vibhajana. Absorption of Sāra. Utpatti and Udieeran of Vāta-Pitta-Kapha.
- Definition of the term Kostha. Physiological classification of Kostha and the characteristics of each kind of Kostha.
- Agni: Description of the importance of Agni. Classification of Agni. Locations, properties and functions of Jātharāgni, Bhūtāgni, and Dhātvaṅni.
- Applied physiology of Agni in Kriyā Śārīra and Cikitsā.
- Description of the aetiology and features of Annavaha Srotodusti. Applied physiology of Annavaha Srotās: Arocaka, Ajīrna, Atīsāra, Grahanī, Chardi, Parināma Śūla Agnimāndya.
- Description of the process of digestion of fats, carbohydrates and proteins in human gastrointestinal tract. Different digestive juices, their enzymes and their mechanisms of action. Functions of Salivary glands, Stomach, Pancreas, Small intestine, Liver and large intestine in the process of digestion and absorption.
- Movements of the gut (deglutition, peristalsis, defecation etc.) and their control. Role of neuro-endocrine mechanisms in the process of digestion and absorption. Enteric nervous system.
- Applied physiology of gastrointestinal tract: Vomiting, Diarrhoea, Malabsorption etc.
- Recent understandings related to the gut microbiota and their role in health and disease.
- Introduction to biochemical structure, properties and classification of proteins, fats and carbohydrates.
- Description of the processes involved in the metabolism of proteins, fats and carbohydrates.
- Vitamins: sources, daily requirement and functions. Physiological basis of signs and symptoms of hypo and hyper-vitaminosis.

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**PAPER – IV**

**MODERN PHYSIOLOGY AND ITS APPLIED ASPECT**

**100 Marks**

**Physiology of Neuro-Immune-Endocrine Mechanisms:**

- Physiology of Nervous System. General introduction to nervous system: neurons, mechanism of propagation of nerve impulse.
- Study of CNS, PNS and ANS. Sensory and motor functions of nervous system. Functions of different parts of brain and spinal cord, Hypothalamus and limbic system
- Physiology of Endocrine system. Classification and characteristics of different hormones. Description of hormones secreted by Hypothalamus, Pituitary gland, Thyroid gland,

Parathyroid glands, Pancreas, Adrenal glands and their physiological effects. Effects of hypo and hyper-secretion of various hormones.

- Male and female reproductive physiology. Spermatogenesis and oogenesis. Hormonal regulation of uterine and ovarian cycles. Physiology of pregnancy and lactation. Parturition.
- Adipose tissue and its Function. Circulating lipids. Description of lipoproteins like VLDL, LDL and HDL and their composition.
- Physiology of immune system. Definition and classification of immunity: Innate, acquired and artificial. Mechanisms involved in humoral and cell mediated immunity.

### **Cardiovascular physiology, Respiratory physiology and Blood:**

- Physiology of Cardio-Vascular system: Functional anatomy of cardiovascular system. Cardiac cycle. Heart sounds. Regulation of cardiac output and venous return. Physiological basis of ECG. Heart-rate and its regulation. Arterial pulse. Systemic arterial blood pressure and its control. Regional circulations. Physiology of lymphatic circulation.
- Physiology of Respiratory system: Functional anatomy of respiratory system. Ventilation. Mechanism of respiration. Exchange and transportation of gases. Neural and chemical control of respiration. Spirometry and lung function tests. Artificial respiration.
- Functions of Haemopoietic system: Composition and functions of blood and blood cells. Haemopoiesis- (stages and development of RBCs, WBCs and platelets); Introduction to bone marrow: composition and functions of bone marrow. Structure and functions of haemoglobin, mechanism of blood clotting, study of platelets. physiological basis of blood groups. Principles of blood transfusion, plasma proteins- synthesis and functions. Applied physiology: Anaemia, Jaundice.

### **Musculoskeletal Physiology:**

- Physiology of muscles. Classification of muscles. Electrical and mechanical properties of Cardiac, skeletal and smooth muscles.

### **Physiology of Excretion:**

- Physiology of excretion. Functional anatomy of urinary tract. Functions of kidneys. Mechanism of formation of urine. Control of micturition. Renal function tests.
- Structure and functions of skin, sweat glands and sebaceous glands.

### **Learners should be well versed with the following instruments-**

- Physiograph, Computerised spirometry, Biochemical Analyzer, Pulse oxymeter, Elisa Reader, Hematology Analyzer, Tread mill

### **Bridge areas including recent advances:**

- Recent studies in biorhythms.
- Recent advances in Neuro-Immune-Endocrine physiology.
- Recent advances in stem cell research

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**Ayurvedic practicals**

- Assessment of Prakṛti
- Assessment of Sāra
- Assessment of Dosa Vrddhi Kṣaya Laksana
- Assessment of Dhātu Vrddhi – Kṣaya Laksana
- Assessment of Agni
- Assessment of Kṣtha
- Assessment of Śarīra Bala through Vyāyāma Śakti
- Mūtra Parīkṣa
- Nāḍī Parīkṣā
- Anguli Pramāṇa
- Assessment of Sātmya

**Hematology**

- Use and care of Compound microscope
- Histological study of different organs
- Hemoglobin estimation
- Total RBC count
- Total WBC count
- Differential leukocyte count
- Packed cell volume (PCV)
- ESR
- Bleeding time
- Clotting time
- Blood grouping and Rh typing

**Urine examination Physical examination**

- Specific gravity and reaction of urine
- Detecting the presence of Albumin in urine
- Detecting the presence of Sugar in urine
- Detecting the presence of Ketone bodies in urine
- Detecting the presence of Bile salts and bile pigments in urine

**Cardio-Vascular system**

- Clinical methods of examining cardiovascular system
- Examination of Arterial Pulse
- Arterial blood pressure measurement: Effect of posture, exercise and cold pressor test on Blood Pressure
- ECG recording and its interpretation
- Heart Sounds

**Respiratory system**

- Clinical examination of Respiratory System
- Lung Function Tests including Spirometry

## **Nervous System**

- Clinical examination of nervous system
- Examination of higher mental functions
- Examination of cranial nerves
- Examination of reflexes
- Examination of sensory functions
- Examination of motor functions
- Examination of Autonomic Nervous System
- EEG recording (Demonstration)

## **Practical Marks Distribution**

1. Practical Record Book	- 05 Marks
2. Ayurvedic Practical	- 10 Marks
3. Modern Practical	- 10 Marks
4. Assessment of Teaching skill	- 10 Marks
5. Project Work (Two assignments)	- 10 Marks
6. Presentation of Thesis	- 15 Marks
7. Viva Voce	- 40 Marks
<b>Total Marks</b>	<b>- 100 Marks</b>

## **REFERENCE BOOKS:**

- |  |  |
|--|--|
| • Ayurvediya Kriyasharir   | - Ranjit rai Desai                       |
| • Kayachikitsa Parichaya   | - C. Dwarikanath                         |
| • Prakrit Agni Vigyan  | - C. Dwarikanath                         |
| • Sharir Kriya Vigyan  | - Shiv Charan Dhyani                     |
| • Abhinava Sharir Kriya Vigyana  | - Acharya Priyavrata Sharma              |
| • Dosha Dhatu Mala Vigyana   | - Shankar Gangadhar Vaidya               |
| • Prakrita Dosha Vigyana   | - Acharya Niranjana Dev                  |
| • Tridosha Vigyana   | - Shri Upendranath Das                   |
| • Sharira Tatva Darshana   | - Hirlekar Shastri                       |
| • Prakrita Agni Vigyana  | - Niranjana Dev                          |
| • Deha Dhatvagni Vigyana   | - Vd. Pt. Haridatt Shastri               |
| • Sharir Kriya Vigyana (Part 1-2)  | - Acharya Purnchandra Jain               |
| • Sharir Kriya Vigyana   | - Shri Moreshwar Dutt. Vd.               |
| • Sharira Kriya Vijnana (Part 1 and 2)                                     | - Nandini Dhargalkar                     |
| • Dosha Dhatu Mala Vigyana   | - Basant Kumar Shrimall                  |
| • Abhinava Sharir Kriya Vigyana  | - Dr. Shiv Kumar Gaur                    |
| • Pragyogik Kriya Sharir   | - Acharya P.C. Jain                      |
| • Kaya Chikitsa Parichaya  | - Dr. C. Dwarkanath                      |
| • Concept of Agni  | - Vd. Bhagwan Das                        |
| • Purush Vichaya   | - Acharya V.J. Thakar                    |
| • Kriya Sharir   | - Prof. Yogesh Chandra Mishra            |
| • Sharir Kriya Vigyana   | - Prof. Jayaram Yadav & Dr. Sunil Verma. |
| • Basic Principles of Kriya-Sharir<br>(A treatise on Ayurvedic Physiology) | - Dr. Srikant Kumar Panda                |

- Sharir Kriya – Part I & Part II – Dr. Ranade, Dr. Deshpande & Dr. Chobhe
- Human Physiology in Ayurveda - Dr Kishor Patwardhan
- Sharirkriya Vignyan Practical Hand Book – Dr.Ranade, Dr.Chobhe, Dr. Deshpande
- Sharir Kriya Part 1 – Dr.R.R.Deshapande, Dr.Wavhal
- Sharir Kriya Part 2 – Dr.R.R.Deshapande, Dr.Wavhal
- Textbook of Physiology - Gyton & Hall
- Review of medical physiology – William Ganong
- Essentials Of Medical Physiology - Sembulingam, K.
- Concise Medical Physiology - Chaudhari, Sujit. K.
- Fundamental of Anatomy & Physiology - Martini
- Principals of Anatomy & Physiology - Tortora & Grabowski
- Human Physiology - Richards, Pocock
- Samson Wrights Applied Physiology, Keele, Neil, joels
- Brainstem Control of Wakefulness And Sleep- Steriade, Mirce
- An Introduction to Human Physiology - Green, J.h.
- Ancient Indian Medicine - Kutumbiah P.
- Biographical History of Indian Medicine - Srikanthamurthy KR
- Ayurveda Kriya Sharira - Yogesh Chandra Mishra
- Textbook of Medical Physiology - Indu Khurana
- Tridosha Theory - Subrahmanya Shastri
- Statistics in Medicine - K. Syamalan

#### **Important journals to refer:**

1. Advances in Physiology Education
2. Academic Medicine
3. Indian journal of Physiology and Pharmacology
4. Journal of Ayurveda and Integrative Medicine
5. Evidence-based Complementary and Alternative Medicine
6. AYU
7. All journals of American Physiological Society
8. Journal of Physiology

#### **Important research papers to refer:**

1. Hong KW, Oh B. Overview of personalized medicine in the disease genomic era. BMB Rep. 2010 Oct;43(10):643-8.
2. Prasher B, Negi S, Aggarwal S, Mandal AK, Sethi TP, Deshmukh SR, Purohit SG, Sengupta S, Khanna S, Mohammad F, Garg G, Brahmachari SK; Indian Genome Variation Consortium, Mukerji M. Whole genome expression and biochemical correlates of extreme constitutional types defined in Ayurveda. J Transl Med. 2008 Sep 9;6:48.
3. Patwardhan B, Bodeker G. Ayurvedic genomics: establishing a genetic basis for mind-body typologies. J Altern Complement Med. 2008 Jun;14(5):571-6. Review. PubMed PMID: 18564959.
4. Bhushan P, Kalpana J, Arvind C. Classification of human population based on HLA gene polymorphism and the concept of Prakriti in Ayurveda. J Altern Complement Med. 2005 Apr;11(2):349-53.

5. Ghodke Y, Joshi K, Patwardhan B. Traditional Medicine to Modern Pharmacogenomics: Ayurveda Prakriti Type and CYP2C19 Gene Polymorphism Associated with the Metabolic Variability. *Evid Based Complement Alternat Med*. 2009 Dec 16. [Epub ahead of print]
6. Aggarwal S, Negi S, Jha P, Singh PK, Stobdan T, Pasha MA, Ghosh S, Agrawal A; Indian Genome Variation Consortium, Prasher B, Mukerji M. EGLN1 involvement in high-altitude adaptation revealed through genetic analysis of extreme constitution types defined in Ayurveda. *Proc Natl Acad Sci U S A*. 2010 Nov 2;107(44):18961-6. Epub 2010 Oct 18.
7. Tav Pritesh Sethi, Bhavana Prasher and Mitali Mukerji. Ayurgenomics: A New Way of Threading Molecular Variability for Stratified Medicine. *ACS Chemical Biology*.2011(6):875-880
8. Marchetti B, Morale MC, Gallo F, Batticane N, Farinella Z, Cioni M. Neuroendocrineimmunology (NEI) at the turn of the century: towards a molecular understanding of basic mechanisms and implications for reproductive physiopathology. *Endocrine*. 1995 Dec;3(12):845-61.
9. Licinio J, Frost P. The neuroimmune-endocrine axis: pathophysiological implications for the central nervous system cytokines and hypothalamus-pituitary-adrenal hormone dynamics. *Braz J Med Biol Res*. 2000 Oct;33(10):1141-8.
10. Turrin NP, Rivest S. Unraveling the molecular details involved in the intimate link between the immune and neuroendocrine systems. *Exp Biol Med (Maywood)*. 2004 Nov;229(10):996-1006
11. Sewlall S, Pillay V, Danckwerts MP, Choonara YE, Ndesendo VM, du Toit LC. A timely review of state-of-the-art chronopharmaceuticals synchronized with biological rhythms. *Curr Drug Deliv*. 2010 Dec;7(5):370-88.
12. Ohdo S. Chronopharmaceutics: pharmaceutics focused on biological rhythm. *Biol Pharm Bull*. 2010 Feb;33(2):159-67
13. Humes HD. Stem cells: the next therapeutic frontier. *Trans Am Clin Climatol Assoc*. 2005;116:167-83; discussion 183-4.
14. Bianco P, Robey PG. Stem cells in tissue engineering. *Nature*. 2001 Nov 1;414(6859):118-21
15. Bhattacharya J. The Knowledge of Anatomy and Health in Ayurveda and Modern Medicine: Colonial Confrontation and Its Outcome
16. Wujastyk D. Interpreting the image of the human body in premodern India. *Int J Hindu Studies* 13: 189–228, 2009.
17. Kristina Harris, Amira Kassis, Geneviève Major, Chieh J. Chou. Is the Gut Microbiota a New Factor Contributing to Obesity and Its Metabolic Disorders? *J Obes*. 2012; 2012: 87915

**2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

**2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

**2.13 Records**

Relevant records are to be maintained

**2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic

Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.

2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.

3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.

4. For approving the title a scrutiny Committee shall be constituted by the University.

5. The University should display the approved synopsis of dissertation on their website.

6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.

7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.

9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.

10. The dissertation shall consist critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication

11. The dissertation shall consist of not less than forty thousand words.

12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.

13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.

14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.

15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.

16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner, the dissertation shall be referred to third examiner.

17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can

resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.

18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

**2.20 Journals**

**List of Journals**

**Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484

21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamy@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in/Open Access Peer Reviewed E-Journal*. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

### 3. EXAMINATIONS

#### 3.1 Eligibility to appear for examinations [including Supplementary]

##### A. Preliminary examination:

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

##### B. Final examination:

For appearing final year examination 80 % attendance in each theory and practical subjects in 2<sup>nd</sup> & 3<sup>rd</sup> years separately is required

#### 3.2 Schedule of Regular/Supplementary exams

The University shall conduct not more than two examinations in a year.

#### 3.3 Scheme of examination showing maximum marks and minimum marks

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

##### **Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

##### **Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

#### SCHEDULE OF EXAMINATIONS

a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.

b. The final examination shall be conducted on completion of three academic years after commencement of PG course.

c. Examination shall ordinarily be held in the month of June or July and November or December every year.

- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination;
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

### **CONDUCT OF EXAMINATION**

- 1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
- 2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.
- 3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.  
The pattern is long essay for 20 marks -one question  
Short essay 10 marks - Eight questions  
Total 9 questions for 100 marks

#### **3.4 Papers in each year**

Given under clause No.2.10

#### **3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

#### **3.6 Model question paper for each subject with question paper pattern**

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Kriya Sharir)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the sub classifications of vata dosha in relation to neuro-physiological functions

**Short Essays**

**(8x10=80)**

2. Analyze the concept of agni & dhatvagni and its role in the formation of asthi dhatu
3. Describe the regulation of heart rate with centers, efferent, afferent nerves, vagal tone and vagal escape
4. Discuss the jeevana function of rakta dhatu in relation to respiratory physiology
5. Describe the source and functions of testosterone with its hormonal control. Your view of anabolic functions of testosterone and kabha dosha
6. Explain the triguna concept and list out the pitta prakriti mental traits.
7. Explain dhatumala concept and differentiate mala & dhatu mala
8. Enumerate the atma lingas and explain the atma lingas with behavioral & motivational mechanism of brain
9. Define and classify stimulus. Explain the types of muscle contraction

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kriya Sharir)  
(..... scheme)**

**Paper I – Dosa-Dhātu-Mala Vijñāna**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the concept of *saarapurusha* and analyze their characteristics under physical, physiological and psychological attributes.

**Short Essays**

**(8x10 = 80)**

2. Discuss the mutual relationship and interactions between *ritu*, *dosha*, *rasa* and *guna*.
3. Explain the rationale behind the description of general and specific locations for each *dosha*.
4. Analyze the mechanism of *dhatuposhana* as per the descriptions in *samhitas*, commentaries and modern books.
5. Explain the mechanism of *vriddhi* and *kshaya* of *rakta*, *mamsa* and *asthi* using the *asraya-asrayi* relationship.
6. Discuss the different dimensions of *ojus* and its relationship with *bala* and *sleshma*.
7. Explain the physiology of *arthava-vaha srotas*.
8. Explain the concepts of *upadhatu* and *dhatumala*. Critically analyze their relation with the concerned *dhatu*s.
9. Discuss the similarities and differences between *agni* and *pitta*.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kriya Sharir)  
(..... scheme)**

**Paper II – Prakriti-Sattva Vijñāna**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the uniqueness of description of *prakriti* in *Charaka samhita* with an example of *vataprakriti*.

**Short Essays**

**(8x10 = 80)**

2. Explain the physiological and clinical significance of sleep.
3. Explain the pathway for auditory sensation and compare with the Ayurvedic concept of *jnanotpatti*.
4. Explain the physiology of pain sensation. Compare the mechanism of action of analgesic drugs and topical analgesics.
5. Explain the uniqueness of concept of *manas* in Ayurveda. Critically analyze the role of *manas* in *jnanotpatti*.
6. Elaborate the concept of higher mental functions and compare with the Ayurvedic concepts of *dhee*, *dhriti* and *smriti*.
7. Explain the functions and connections of basal ganglia.
8. Differentiate between *jeevatma* and *paramatma*. Make a comparison between the properties of *atma* and *manas*.
9. Explain the mechanism of speech and its regulation.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kriya Sharir)  
(..... scheme)**

**Paper III – Kosthanga Kriya Vijñāna**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the concept of *Agni*. Elaborate the different types of *Agni* and compare them with relevant biological, physiological and biochemical concepts.

**Short Essays**

**(8x10 = 80)**

2. Explain how the movements of GIT are regulated. Trace out the role of different subdivisions of *vata* in these mechanisms.
3. Describe the recent advances regarding the role of gut microbes in health and disease. Discuss relevant Ayurvedic concepts in this regard.
4. Why do we need to determine the type of *koshta* in a patient? How does it change the treatment protocol in a disease?
5. Enlist the *aharaparinamakara bhavas*. Critically analyze each of them using the concepts from digestive physiology.
6. Explain how *aharapaaka* and *doshas* are related. Differentiate between the pharmacokinetics and pharmacodynamics of *paaka* in an Ayurvedic perspective.
7. Explain the applied physiology behind the conditions of *chardi* and *atisara*.
8. Explain the rationale behind the administration of *peyadikrama* after a *sodhana* procedure based upon the gastrointestinal physiology.
9. How do the vitamins differ from the other components of food? Explain the physiological importance of vitamins A and D.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kriya Sharir)  
(..... scheme)**

**Paper IV – Modern Physiology and its applied aspect**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the female reproductive cycle along with its hormonal regulation.

**Short Essays**

**(8x10 = 80)**

2. Explain the functions, regulation and mechanism of secretion of insulin.
3. Describe the neural centers that influence the process of feeding. Discuss the long term and short term regulation of food intake.
4. Explain the autonomic effects on various organs of the body. Explain the types and functions of adrenergic and cholinergic receptors.
5. Explain the mechanism of pulmonary ventilation. Discuss the patho-physiology of emphysema and asthma.
6. Describe the mechanism of hemostasis. Explain the role of investigations in bleeding disorders.
7. Define GFR and filtrate fraction. Explain the mechanism of glomerular filtration and various pressures which determine GFR.
8. Explain circulatory shock and physiology of its treatment.
9. Explain the functions of specific cortical areas.

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

**3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

**3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

**4. INTERNSHIP**

Not applicable

**5. ANNEXURES**

**5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

**Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and

achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner, the

dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

## **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study
7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

## **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

## **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

## **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

## **Annexure**

1. Required annexure and appendices

## **Miscellaneous**

### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman
8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.
12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

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## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Vachaspati – Dravyaguna Vigyana  
(M.D. (Ayurveda) -  
Materia Medica and Pharmacology)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Vachaspati – Dravyaguna Vigyana (M.D. (Ayurveda) - Materia Medica and Pharmacology)

### 2.2 Objectives:

The aims of the post - graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

## **2.9 Teaching learning methods**

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## **2.10 Content of each subject in each year**

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**

**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
- 5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati  
Aushadhi-yog Parikshana Paddhati  
Swastha, Atura Pariksha Paddhati  
Dashvidha Parikshya Bhava  
Tadvidya sambhasha, vadmarga and tantrayukti
- 6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**
- 7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

  - a. Panchamahabhuta and tridosha.
  - b. Concepts of rasa, guna, virya, vipak, prabhav and karma
  - c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.
- 8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.
- 9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
- 10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**
- 11. Introduction to latest Trends in Drug Discovery and Drug Development**
  - Brief information on the traditional drug discovery process
  - Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
  - Brief introduction to the process of Drug development.
- 12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies

Randomized Controlled Trials (RCT) & their types

Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies –

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

- 13.** Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
National Pharmacovigilance Programme for ASU drugs.
- 14.** Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
- 15.** Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

- 1.** Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
- 2.** Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
- 3.** Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
- 4.** Measures of Central tendency – Mean, Median and Mode.
- 5.** Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
- 6.** Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
- 7.** Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
- 8.** Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete

**9. Measures of Central tendency – Mean, Median and Mode.**

**10. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation**

**11. Non parametric methods: Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)**

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.  
Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:**  
Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography: computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics**

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

### **PRACTICAL**

**100 Marks**

**Teaching hours – 120**

### **I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and

	toxicology
5	Biochemistry (Clinical) Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
6	Clinical Pathology Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
7	Imaging Sciences Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
8	Clinical protocol development

## II. MEDICAL STATISTICS

Practical hours - 20

Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.

Records to be prepared.

Distribution of marks (Practical):

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

1. Aushotosh Kar "Pharmacognos & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
4. Kokate, CK., Purohit, AP, Gokhale, SB (2010). Pharmacognosy. Nirali Prakashan. Pune.
5. Kokate, CK., Khandelwal and Gokhale, SB (1996). Practical Pharmacognosy. Nirali Prakashan. Pune.

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7. Tyler V C., Brady, L R., and Robers J E., Pharmacognosy, Lea and Febiger, Philadelphia.
8. Tyler VE Jr and Schwarting AE., Experimental Pharmacognosy, Burgess Pub. Co, Minneapolis, Minnesota.
9. Wallis- TE (2011)- reprint. Practical Pharmacognosy (Fourth Edition) Pharma Med Press, Hyderabad.
10. Wallis T E, Analytical Microscopy, J & A Churchill limited, London.
11. Wallis T E., Text Book of Pharmacognosy, J & A Churchill Limited, London.
12. WHO guidelines on good agricultural and collection practices- (GACP) for medicinal plants (2003).World Health Organization- Geneva.
13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
2. Brain, KR and Turner, TD. (1975). The Practical Evaluation Phytopharmaceuticals. Wright Scientechnica, Bristol.
3. Galen Wood Ewing (1985). Instrumental Methods of Chemical Analysis. McGraw- Hill College ; Fifth edition
4. Harborne, JB (1973). Phytochemistry Methods. Chapman and Hall, International Edition, London.
5. HPTLC- Fingerprint atlas of Ayurvedic Single Plant Drugs mentioned in Ayurvedic Pharmacopoeia Vol- III and IV. CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA. New Delhi.
6. Kapoor, RC (2010). Some observations on the metal based preparations in Indian System of Medicine. Indian Journal of Traditional Knowledge. 9(3): 562-575
7. Khopkar, S. M. Analytical Chemistry, New Age International Publishers , 3 rd edition
8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
9. Mahadik KR, Bothara K G. Principles of Chromatography by, 1st edition, Nirali Prakashan.
10. Qadry JS and Qadry S Z., Text book of Inorganic Pharmaceutical and Medicinal Chemistry, B. S. Shah Prakashan, Ahmedabad.
11. Quality Control Methods for Medicinal Plant Material. Reprint (2002). WHO Geneva.
12. Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
15. Stahl E., Thin Layer Chromatography - A Laboratory Handbook, Springer Verlag, Berlin.

16. Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo and Dev Dutt Rakesh (2008). Extraction Technologies for Medicinal and Aromatic Plants INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste

### **Biochemistry and Laboratory techniques:**

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
3. David Frifelder. W. H. Freeman. (1982). Physical Biochemistry by; 2 edition
4. David Sultan (2003). Text book of Radiology and Imaging, Vol-1, 7th Edition.
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6. Harold Varley. Practical Clinical Bio-chemistry
7. Kanai L.Mukherjee. Clinical Pathology:, Medical Laboratory Technology Vol. I.Tata McGrawHill 1996, New Delhi.
8. Gradwohl, Clinical Laboratory-methods and diagnosis, Vol-I
9. Clinical Biochemistry -Sabitri Sanyal, Clinical Pathology, B.I.Churchill Livingstone (P) Ltd, New Delhi.2000.
10. Satyanarayanan,U. Essentials of Biochemistry, Books and allied(P) Ltd.2002
12. Zubay, G.L. Biochemistry, W.M.C. Brown Publishers, New York 1998.
13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
3. Altick and Fenstermaker. (2007). *The Art of Literary Research*. 4th ed. W. W. Norton. Castle, Gregory. *Blackwell Guide to Literary Theory*. Blackwells,
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7. Deepika Chawla and Neena Sondhi. (2011). Research Methods- Concepts and cases. New Delhi: Vikas Publishing House.
8. Greenhalgh, T. (2006) How to Read a Paper: The Basics of Evidence-Based Medicine. (3rd ed) Blackwell
9. Kothari - CR (2004). Research Methodology- Methods and Techniques (Second Revised Edition). New Age International Publishers- New Delhi.
10. Kumar, R. 2005. *Research Methodology: a Step-by-Step Guide for Beginners*, 2<sup>nd</sup> ed. Thousand Oaks, CA, London: Sage Publications.
11. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
12. Relevant portions of Ayurvedic Samhitas and other texts

### **Drug research and development:**

1. RICK NG, (2009). DRUGS-from discovery to approval. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
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6. Gazette Extraordinary Part- II-Section 3 - Sub section (i) December 2008. Govt of India. AYUSH Guidelines on safety studies- Rule 170 of Drugs and Cosmetics Act.
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8. OECD Guideline for the Testing of Chemicals – Repeated Dose 90-day Oral Toxicity Study in Rodents, 408, 1998.  
<http://browse.oecdbookshop.org/oecd/pdfs/free/9740801e.pdf>(latest version)
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13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
14. Ravindran R.: X-Pharm (Software), Indian Journal of Pharmacology, *JIPMER, Pondicherry.*

### **Biotechnology and Bio-informatics:**

1. Angela M. Meireles A (2009). Extracting Bioactive compounds for food products. Theory and applications. CRC- Press Taylor and Francis Group.
2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978- 81-8318-831-9
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6. Setubal J. C and J. Meidanis, Introduction to Computational Molecular Biology, PWS Publishing Company, 1997.
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8. <http://www.zygogen.com>.
9. <http://www.dsir.nic.in/reports/tifp/database/metallo.pdf>.
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11. [www.strobe-statement.org](http://www.strobe-statement.org)
12. [www.icmr.nic.in](http://www.icmr.nic.in)

### **Clinical Evaluation:**

1. CDSCO, Good Clinical Practices For Clinical Research in India, Schedule Y (Amended Version – 2005), <http://cdsco.nic.in/html/GCP1.html>
2. Ethical Guidelines for Biomedical Research on Human subjects. (2000). Indian Council of Medical Research- New Delhi.
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9. William C. Scheffer Introduction to Clinical Researchs

### **Medical Statistics:**

1. Armitage, P. and Berry, G. (1994) Statistical Methods in Medical Research (3rd ed). Blackwell Science.
2. Armitage P, Berry G, Matthews JNS: *Statistical Methods in Medical Research*. Fourth edition. Oxford, Blackwell Science Ltd; 2002
3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
4. Bradford Hill – Basic Medical Statistics
5. Cambell, M.J. and Machin, D. (1993) Medical Statistics: A Common Sense Approach (2nd ed). Chester: Wiley.
6. Dwivedi S. N., Sundaram K. R and V. Sreenivas (2009). Medical Statistics -

- Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
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  8. Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India
  9. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
  10. Mehdi, B and Prakash A. (2010). Biostatistics in Pharmacology. Practical Manual in experimental and clinical pharmacology. 1st Edition. New-Delhi: Jaypee brothers Medical Publishers
  11. Rao, NSN and Murthy, NS. (2008) 2nd Edition. Applied statistics in health sciences. Jaypee Brothers Medical Publishers (P) Ltd. Bengaluru, New Delhi.
  12. Rick J Turner and Todd A Durham (2008). Introduction to Statistics in Pharmaceutical Clinical trials. Published by the Pharmaceutical Press- An imprint of RPS Publishing, 1 Lambeth High Street, London SE1 7JN, UK
  13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
  14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
  15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana – A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.D.-AYURVEDA PRELIMINARY**

#### **DRAVYAGUNA VIGYANA (Materia Medica & Pharmacology)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

**PART A**

**50 Marks**

1. Panchamahabhuta siddhanta, Samanya Vishesha siddhanta, Tridosha siddhanta. Extensive study on classifications of Dravya as described in Brihatrayi.
2. Applied aspects of Rasa, Guna, Virya, Vipaka and Prabhava
3. Applied aspects of Aushdha karma with reference to Sharngadhara and Bhavaprakasha
4. Importance of Namarupa vigyan and concept of basonyms and synonyms of Dravyas
5. Applied knowledge of Bhaishajya Prayoga (marga, kalpana, matra, anupana, sevan, kala

**PART B****50 Marks**

1. Basic principles of Desha pravichara, Dravya sangrahana (collection), Samrakshana (preservation)
2. Evolution of Dravyaguna vigyan with special emphasis on Nighantus
3. Prashasta bheshaj lakshana
4. Profound knowledge on applied aspects of Agrya aushadha
5. Methodology of studying controversial, pratinidhi (substitute), apamishrana (adulterant) and unidentified dravya
6. Pharmacognosy and its relevance in Dravyaguna vigyan
7. An integrated study of Charakokta Bheshaj pariksha and scientific method of drug evaluation with special reference to quality, safety and efficacy
8. Brief knowledge and importance of clinical pharmacology
9. General principles of various good cultivation practices, collection practices, storage practices and manufacturing practices
10. Pharmacovigilance and ADR issues
11. Knowledge on the Ayurvedic Pharmacopoeia of India, The Formulary of India and international pharmacopoeias

**PRACTICAL****100 Marks****Contents**

1. Field visits for the Identification of important classical medicinal plants (Minimum two visits to neighboring forest areas)
2. Macroscopic and microscopic identification of minimum two plants of each of prayojyanga (useful parts of plants)
3. Preliminary study of pharmacoepial standards (API) of minimum 5 plants
4. Minimum two experiments on Animals

**Distribution of Marks:**

1. Herbarium sheets	-10 Marks
2. Practical of macroscopic and microscopic identification of prayojyanga (one part of the plant)	-30 Marks
3. Practical record book of pharamcopoeial standards and animal experimentations	-10 Marks
4. Spotting	-30 Marks
5. Viva-voce	-20 Marks
<b>Total</b>	<b>- 100 Marks</b>

**Reference Books:-**

1	Abhinav Buti Darpan (Vol.1-2)	-	Vd. Roop Lal Vaishya
2	Aushadna Vigyna Shastra	-	Acharya Pt. Vishvanatha Dwidevi
3	Ayurvediya Aushadnkarma vigyana	-	Acharya V.J. Thakur
4	Bedi Vanaspati Kosha	-	Prof. Ramesh Bedi
5	Bhaishajyaguna Vigyana	-	Dr. Alakhnarayan Singh
6	Bhav Prakash Nigantu (English)	-	Shreekanthamurti

7	Bhav Prakash Nighantu	-	With Vd. Krishna Chandra Chunekar commentary
8	Bhrinad dravyagunadarsha	-	Mahendra Kumar Shastri
9	Classical Uses of Medicinal Plants	-	Acharya Priyavrata Sharma
10	Controversial Medicinal Plants	-	Vd. G. Bapa Lal
11	Dalhana Ka Dravyaguna Shastra Ke Kshetra Me Yogadana	-	Vd. Shiv Kumar Vyas
12	Dravyaguna Kosha	-	Acharya Priyavrata Sharma
13	Dravyaguna Sutram	-	Acharya Priyavrata Sharma
14	Dravyaguna Vigyana	-	Dr. Gyanendra Pandey
15	Dravyaguna Vigyana(Vol. 1-2)	-	Acharya Yadavji Tikram Ji
16	Dravyaguna Vijyana	-	Dr. V.M. Gogate
17	Dravyaguna Vigyana (Vol. 1-5)	-	Acharya Priyavrata Sharma
18	Dravyaguna Shastrum	-	Vaidya G.A. Phadake
19	Dravyaguna Vijyana	-	Dr. A.P. Deshpande
20	Dravyagunavijnana basic Principles	-	Prof.D.S.Lucas
21	Forgotten Healers (Indian Medicinal Plants)	-	Dr. Prakash Pranjape
22	Glossry of Vegetable Drugs in Bhritrtrayis	-	Thakur Balwant Singh & Vd. Krishna Chandra Chunekar
23	Introduction to Dravyaguna	-	Acharya Priyavrata Sharma
24	Kriyatamka Aushadi Parichaya	-	Acharya Pt. Vishvanath Dwidevi
25	Materia Medica	-	Acharya Ghosh
26	Nighantu Adarsh (Vol. 1-2)	-	Vd. Bapa Lal
27	Pharmacological basis of Medical Practice	-	Goodman & Gillman
28	Pharmacology and	-	Satoskar Bhandarkar & Ainapure
29	Prayogatamaka Dravyaguna Vigyana	-	Dr. Maya Ram Uniyal
30	Priya nighantu	-	Acharya Priyavrata Sharma
31	Raspanchaka/Dravyaguna Siddhanta	-	Prof. Shivcharan Dhyani
32	System of Plant Nomenclature in	-	Dr. Gyanendra Panday
33	Text Book of Pharmaconogy	-	Trees & Valis
34	Textbook of Dravyaguna	-	Dr.K.Nishteswar
35	Unani Dravyaguna Vigyana	-	Hakim Daljeet Singh

36	Useful parts of Charaka, Sushurut, and Vagbhata.	-	
37	Uttarakand Ki Vanaspatiya	-	Dr. Gyanendra Pandey
38	Vanoaushadi Darshika	-	Thakur Balwant Singh
39	Vanoaushadi Nidarshika	-	Dr. Ram Sushil Singh
40	Vedic Vanaspatiyan	-	Dr. Dinesh Chandra Sharma
41	Pharmacopia of India –all the volumes	-	

42	Database on medicinal plants all the volumes of CCRAS		
43	Aurveda formulary of india – all the volumes		
44	All the nighantoos		
45	Laghutrayi		

#### **Additional Books for Reference**

1. Pharmacognosy of Ayurvedic Drugs Vols 1-14: Publication Division, Govt. Ayurveda College, Trivandrum
2. Indian Medicinal Plants 5 Volumes : Arya Vaidya Sala, Kottakkal
3. A Hand Book on the Plant Sources of Indigenous Drugs : Dr. P. Y. Ansary
4. Practical Guide to Dravyaguna Vijnanam : Dr. P. Y. Ansary

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### **M.D.- AYURVEDA FINAL YEAR**

#### **DRAVYAGUNA VIGYANA (Materia Medica & Pharmacology)**

#### **PAPER - I**

#### **NAMARUPAVIGYANA**

**100 Marks**

1. Importance of Namagyana of Dravya, origin of Namarupagyana of Aushadhi in Veda, etymological derivation of various names and synonyms of Aushadhi.
2. Rupagyana in relation to Aushadhi. Sthula and Sukshma description (Macroscopic and Microscopic study) of different parts of the plant.
3. Synonyms of dravyas (aushadha and Ahara) mentioned in Vedic compendia, Brihatrayee, Bhavaprakasha and Rajanighantu.
4. Basonyms, synonyms and distinguish morphological characteristic features of medicinal plants listed in Ayurvedic Pharmacopoeia of India (API).
5. Knowledge of Anuktadravya (Extrapharmacopial drugs) with regards to namarupa.
6. Sandigdhadravya (Controversial drugs) vinischaya.
7. Knowledge of biodiversity, endangered medicinal species.
8. Knowledge of TKDL, Introduction to relevant portions of Drugs and cosmetic act, Magic remedies Act, Intellectual Property Right (IPR) and Regulations pertaining to Import and Export of Ayurvedic drugs.
9. Knowledge of tissue culture techniques
10. Knowledge of Genetically Modified Plants

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**PAPER – II****GUNA KARMA VIGYAN****100 Marks**

1. Fundamental principles of drug action in Ayurveda and conventional medicine.
2. Detailed study of rasa-guna- virya- vipaka-prabhava and karma with their applied aspects and commentators (Chakrapanidatta, Dalhana, Arunadatta, Hemadri and Indu) views on them.
3. Comprehensive study of karma as defined in Brihatrayee & Laghutrayee
4. Detailed study of Guna and Karma of dravyas listed in API and Bhavaprakasha Nighantu along with current research review.
5. Detailed study of aharadravya/ ahara varga ascribed in Brihatrayee and various nighantus along with Kritanna varga.
6. Pharmacological principles and knowledge on drugs acting on various systems.
7. Basic knowledge on experimental pharmacology for the evaluation of - analgesic, anti pyretic, anti inflammatory, anti diabetic, anti hypertensive, hypo lipidemic, anti ulcer, cardio protective, hepatoprotective, diuretics, adaptogens, CNS activites.
8. Knowledge on Heavy metal analysis, pesticidal residue and aflatoxins
9. Knowledge on evaluation of anti microbial and antimycotic activities.

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**PAPER - III****PRAYOGAVIGYANA****100 Marks**

1. BhaishjyaPrayogSiddhant [Principles of drug administration] - BhaishajyaMarga (routes of drug administration), VividhaKalpana (Dosage forms), Principles of Yoga Vijnan (compounding), Matra (Dosage), Anupana (Vehicle), Aushadhagrahankal (Time of drug administration), Sevankalavadhi (duration of drug administration), Pathyapathya (Dos' /Donts' /Contraindications), complete Prescription writing (SamagraVyavasthapatraka).
2. Samyoga- ViruddhSidhanta and its importance
3. Amayikaprayoga (therapeutic uses) of important plants ascribed in as well as Brihatrayee, Chakradutta, Yoga ratnakara and Bhavaprakasha.
4. Knowledge of Pharmaco-vigilance in Ayurveda and conventional system of medicine.
5. Knowledge of clinical pharmacology and clinical drug research as per GCP guide lines.
6. Knowledge of Pharmacogenomics

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**PAPER – IV****NIGHANTU PARICHAYA - YOGA VIGYAN****100 Marks**

1. Etymology of nighantu, their relevance, utility and salient features.
2. Chronological history of the following Nighantus with their authors name, period and content- Paryaya ratnamala, Dhanvantari nighantu, Hridayadipika nighantu, Ashtanga nighantu, Rajanighantu, Siddhamantra nighantu, Bhavaprakasha nighantu, Madanpala nighantu, Rajavallabha nighantu, Madhava Dravyaguna, Kaiyadeva nighantu, Shodhala nighantu, Saligram nighantu, Nighantu ratnakara, Nighantu adharsha and Priya nighantu
3. Detailed study Aushadha kalpana mentioned in Sharangadhara samhita and Ayurvedic Formulary of India (AFI).

4. General awareness on poshaka ahara (Nutraceuticals), Varnya (cosmoceuticals), food additives, Excipients etc.
5. Knowledge of plant extracts, colors, flavors and preservatives.
6. Review of important modern works on classical medicinal plants published by Govt of India, department of AYUSH and ICMR.

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## **PRACTICALS**

### **Syllabus of the Practical training of part two M.D. (Ayu) - Dravyaguna**

#### **Practical:-**

**Study tours:** Field identification of medicinal plants through at least three local Dravyaguna study tours within the state and one study tour out of state. Preparation of minimum 50 herbarium sheets, along with raw drug either from field, of plants be collected during study tours.

#### **1. Evaluation of Crude drugs:**

Macro and microscopic methods of examining five drugs of each of different useful parts of plants, including their powders.

#### **2. Phytochemical evaluation of raw material:**

Quantitative standards like foreign matter, extractive (water and alcohol), ash value, acid insoluble ash and TLC separation of various parts of minimum two plants of Ayurvedic Pharmacopoeia of India.

#### **3. Yoga vijnana:**

Preparation of two yoga of each kalpana of Ayurvedic Formulary of India:

#### **4. Pharmacology:**

- ✓ Rasa nirdharana by Taste Threshold method of minimum one drug for each of rasas.
- ✓ Observation of animal experimentation models (both in vitro and in vivo)- 05 models for possible rasadi gunas.

#### **5. Clinical**

- ✓ Regular clinical training in the hospital for submission of Single Aushadhi Prayoga (Single drug trial/ Clinico-pharmacological studies.)
- ✓ Survey for Amayika prayoga of aushadhi(Pharmaco epidemiology) for studying their role in clinical practice in contemporary period -observational study-minimum.

#### **6. Dissertation**

A Dissertation, as per the approval of Departmental Research Committee/Competent Committee for the purpose, be prepared under the guidance of approved supervisor in Dravyaguna and submitted 6 months before the final examination. The approval of Dissertation shall be essential before appearing the final examinations.

**7. Method of practical training – Posting for minimum one month in each of the following units -**

- ✓ Quality control laboratory of nearest pharmacy/institution for crude drug identification, adulterants and substitutes & understanding standardization techniques.
- ✓ Experimental pharmacology laboratory for developing skills in animal experimentation
- ✓ Regular clinical training in the Teaching hospital for studying Ekala Aushadhi Prayoga & Adverse drug reactions (ADR).

8. Post Graduate Scholar is expected to present minimum two scientific papers in National / international seminars during the course of study

9. Post Graduate Scholar is expected to publish / get accepted at least one paper in indexed/ peer reviewed journal under the supervision of guide.

**Pattern of Practical Examination-**

1. Herbarium	- 05 Marks
2. Pharmacognosy practical record	- 05 Marks
3. Pharmacology practical record	- 05Marks
4. Clinical records record	- 05 Marks
5. Practical examination (Identification of green and raw drugs, microscopic examination, Ekala aushadha pariksha	- 30 Marks
6. Thesis Presentation	- 10Marks
7. Viva voce	- 40 Marks
<b>Total</b>	<b>- 100 marks</b>

**REFERENCE BOOKS:**

- |   |                              |
|---|------------------------------|
| 1. Rigvedasya Aushadhi Suktam   | - Sayana Bhashya Sahitam     |
| 2. Relevant portions of classical texts of Charak, Sushrut and Vagbhata |                              |
| 3. All available Nighantus  |                              |
| 4. Dhanwantari Nighantu Rajnighantu Sahit                               |                              |
| 5. Sharngadhar Samhita  |                              |
| 6. Yogaratnakar   |                              |
| 7. Sharngadhar Samhita  |                              |
| 8. Yogaratnakar   |                              |
| 9. Dravyaguna Vigyanam  | - Yadavji Trikamji Acharya   |
| 10. Dravyaguna Vigyanam   | - Acharya Priyavrat Sharma   |
| 11. Aushadhiguna Vigyanam   | - Pt. vishwanath Dwivedi     |
| 12. Kriyatmak Aushadh Parichaya Vigyan                                  | - Pt. vishwanath Dwivedi     |
| 13. Abhinav Buti Darpana  | - Roopalal Vaishya           |
| 14. Aushadhagunadharma Shastra  | - Pt. Gangadhar Shastri Gune |
| 15. Bhavprakash Nighantu  | - Dr.K.C.Chunekar            |
| 16. Vedon Main Dravyaguna Shastra                                       | - Vishvanath Dvivedi         |
| 17. Kriyatmak Aushadhi Parichay Vigyana                                 | - Vishvanath Dvivedi         |
| 18. Kriyatmak Aushadhi Parichay Vigyana                                 | - Vishvanath Dvivedi         |
| 19. Nighantu Adarsha Purvardha & Uttarardha                             | - Bapalal Vaidya Unani       |
| 20. Dravyaguna Adarsha  | - Hakim Dalijit Singh        |

21. Ayurved ki Aushadhiyan Aur Unka Vargikaran - Vishvanath Dvivedi
22. Aushadhi Vigyan Shastra - Vishvanath Dvivedi
23. Glossary of vegetable drugs in Bruhatrayi - Thakar Balwant Sing & Chunekar
24. Some contravertial drug in Indian Medicine - Dr. Bapalal Vaidya
25. Books on Dravyaguna by contemporary authors
26. Books on Pharmacognosy
27. Books on General, Experimental & Clinical Pharmacology.
28. Ayurvedic Pharmacopia of India & other pharmacopias of the world
29. Indian Pharmacopia
30. All the classical texts related to medicinal plants.
31. All the scientific publications on medicinal plants
32. Journals on medicinal plants
33. Different Floras

#### **Additional Books for Reference**

1. Pharmacognosy of Ayurvedic Drugs Vols 1-14: Publication Division, Govt. Ayurveda College, Trivandrum
2. Indian Medicinal Plants 5 Volumes : Arya Vaidya Sala, Kottakkal
3. A Hand Book on the Plant Sources of Indigenous Drugs : Dr. P. Y. Ansary
4. Practical Guide to Dravyaguna Vijnanam : Dr. P. Y. Ansary

#### **2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

#### **2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

#### **2.13 Records**

Relevant records are to be maintained

#### **2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.
3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.
4. For approving the title a scrutiny Committee shall be constituted by the University.
5. The University should display the approved synopsis of dissertation on their website.

6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.
7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.
9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.
10. The dissertation shall consists critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.
11. The dissertation shall consist of not less than forty thousand words.
12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.
13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.
14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.
15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.
16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.
17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.
18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

## **2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

## **2.19 Reference books**

Given under clause No. 2.10

## **2.20 Journals**

### **List of Journals**

#### **Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamya@gmail.com

35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in/Open Access Peer Reviewed E-Journal*. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

## **3. EXAMINATIONS**

### **3.1 Eligibility to appear for examinations [including Supplementary]**

A. Preliminary examination:

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

B. Final examination:

For appearing final year examination 80 % attendance in each theory and practical subjects in 2 nd & 3 rd years separately is required

### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

**Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

**Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

**SCHEDULE OF EXAMINATIONS**

- a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.
- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

**CONDUCT OF EXAMINATION**

1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.

3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

#### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.

The pattern is long essay for 20 marks -one question

Short essay 10 marks - Eight questions

Total 9 questions for 100 marks

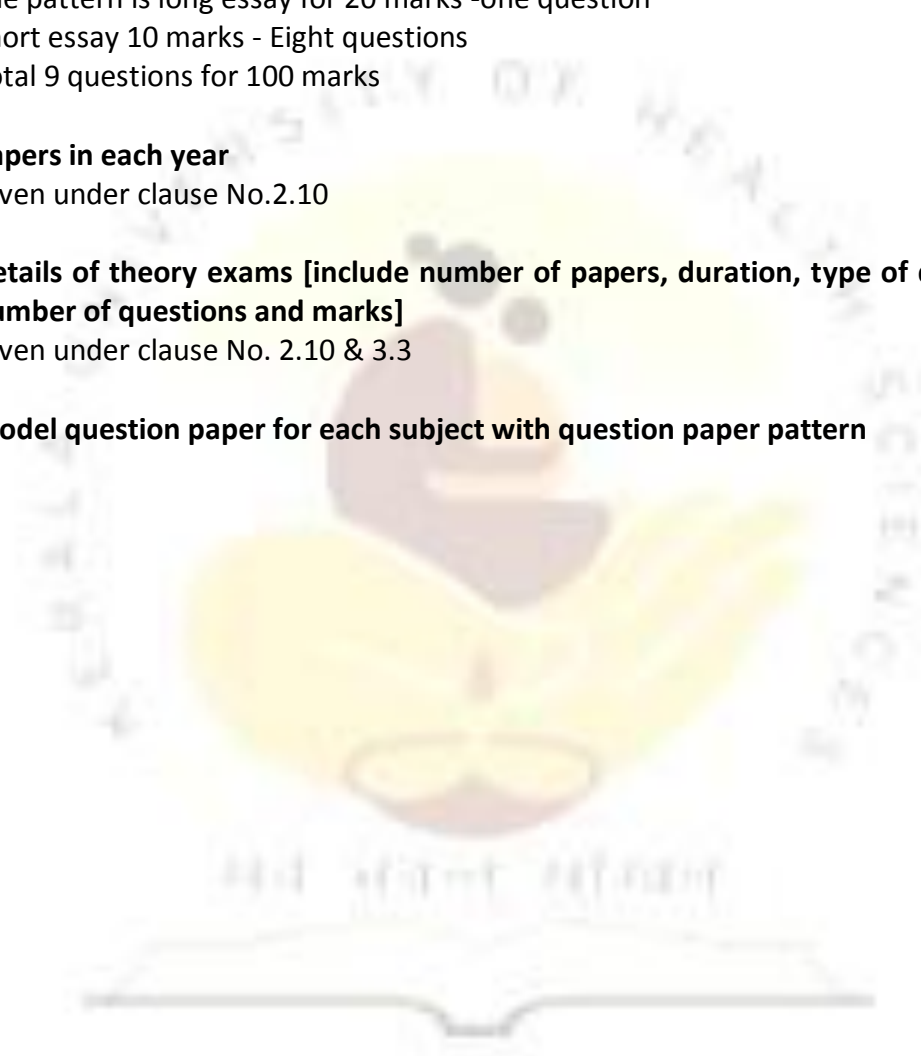
#### **3.4 Papers in each year**

Given under clause No.2.10

#### **3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

#### **3.6 Model question paper for each subject with question paper pattern**



QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Dravyaguna Vigyana)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain Panchamahabhootasidhanta and the role of this principle in Dravyachikitsa.

**Short Essays**

**(8x10=80)**

2. Define Guna. What is the role of Gurvedigunas in chikitsa?
3. What is Vipakam? Explain the level of action of different types of Vipaka.
4. Explain the mode of action of Adhobhaga mala nirharana karmas mentioned by
5. Acharya Sargadhara with examples
6. Scientifically analyze different criteria proposed for the collection of Dravya (Dravyasamgrahanam).
7. Describe the methods of Drug Evaluation
8. Explain the role of Nighantus in the development of Dravyagunasashtra.
9. Substantiate time of administration of drug (Bhaisajyakalam) according to Pharmacological principles.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Dravyaguna Vigyana)  
(..... scheme)**

**Paper I – Namarupa Vigyan**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe ancient and recent methods used in the identification of drugs

**Short Essays**

**(8x10 = 80)**

2. Explain the criteria utilized for the nomenclature of drugs.
3. Describe the taxonomical features of the drug “Eranda” with the help of a neat diagram
4. Illustrate the organoleptic characters of “Asoka bark” and “Hareetaki fruit” with the help of diagrams
5. Explain the methods of Standardization of Ayurvedic crude drugs.
6. Give scientific rationale to the criteria described in Ayurvedic classics for the collection of Dravya (Dravya samgrahanam).
7. Describe the controversial aspects of “Rasna” in detail
8. Explain different methods employed in the detection of illegal substitutes and adulterants with examples
9. Write short notes on
  - a). TKDL
  - b). Tissue culture technique

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Dravyaguna Vigyana)  
(..... scheme)**

**Paper II – Guna Karma Vigyan**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Define “Karmam”. Explain the pharmacodynamics of various “Sodhana” karmas described by Acharya Sargadhara with examples

**Short Essays**

**(8x10 = 80)**

2. Differentiate “Rasam” and “Anurasam” of a drug
3. Explain the clinical applications of Gurvadi gunas
4. Describe the concept of Veerya in the context of potency of drug
5. Explain the level of pharmacological action of Vipaka of dravya with suitable examples.
6. Explain the Rasapanchaka and mode of action of the drug “Vasa”
7. Describe the controversial aspects of “Rasna” in detail
8. Describe the methods of safety evaluations of drug
9. Design an experiment for the anti-inflammatory screening of an Ayurvedic drug

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Dravyaguna Vigyana)  
(..... scheme)**

**Paper III – Prayoga Vigyan**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe the principles of Drug administration according to Ayurvedic pharmacology

**Short Essays**

**(8x10 = 80)**

2. Explain the advantages and disadvantages of different routes of administration of Ayurvedic drugs
3. What are the implications of Pathyas and Apathyas in chikitsa?
4. Describe the pharmacotherapeutics of the drug “Haridra” with respect to Kalpanabheda
5. Mention the useful parts of the drug “Vilvam” and explain their therapeutical benefits.
6. What is Drug incompatibility? Describe the concepts in Ayurveda.
7. Give a brief introduction to Reverse Pharmacology
8. Describe the role of Anupana in drug administration with suitable examples
9. Write the protocol for RCT to be conducted on an Ayurvedic drug

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Dravyaguna Vigyana)  
(..... scheme)**

**Paper IV – Nighantu Parichaya - Yogavigyan**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Substantiate the scientific rationale of Yogas and Ganas in Ayurvedic classics

**Short Essays**

**(8x10 = 80)**

2. Describe the role of Nighantus in the study of Dravyagunavinanam
3. Explain the salient features of Bhavaprakasa Nighantu?
4. Describe the classification of Ahara dravyas in important Nighantus
5. Write the formulation – Avipathikara choorna. Critically analyze each ingredients in the framework of “samyoga” sidhanta”
6. Describe the important methods of standardization of Ayurvedic formulations
7. Explain the standards of Good Manufacturing Practices
8. Discuss the merits and demerits of Herbal extracts
9. Write short notes on a) Food additives  
b) Nutraceuticals

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

**3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners

should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

### **4. INTERNSHIP**

Not applicable

### **5. ANNEXURES**

#### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended

for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study
7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman
8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.

12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

\*\*\*\*\*



## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Vachaspati –  
Roga Nidana evam Vikriti Vigyana  
(M.D. (Ayurveda) -  
Diagnostic procedure and Pathology)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Vachaspati – Roga Nidana evam Vikriti Vigyana (M.D. (Ayurveda) - Diagnostic procedure and Pathology)

### 2.2 Objectives:

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

## **2.9 Teaching learning methods**

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## **2.10 Content of each subject in each year**

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**

**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
- 5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati  
Aushadhi-yog Parikshana Paddhati  
Swastha, Atura Pariksha Paddhati  
Dashvidha Parikshya Bhava  
Tadvidya sambhasha, vadmarga and tantrayukti
- 6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**
- 7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

  - a. Panchamahabhuta and tridosha.
  - b. Concepts of rasa, guna, virya, vipak, prabhav and karma
  - c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.
- 8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.
- 9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
- 10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**
- 11. Introduction to latest Trends in Drug Discovery and Drug Development**
  - Brief information on the traditional drug discovery process
  - Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
  - Brief introduction to the process of Drug development.
- 12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies

Randomized Controlled Trials (RCT) & their types

Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies –

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
National Pharmacovigilance Programme for ASU drugs.
14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

1. Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
2. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
3. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
4. Measures of Central tendency – Mean, Median and Mode.
5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
6. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
7. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
8. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
9. Measures of Central tendency – Mean, Median and Mode.

**10. Variability:** Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation

**11. Non parametric methods:** Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.

Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:** Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography:** computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

### **PRACTICAL**

**100 Marks**

**Teaching hours – 120**

### **I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and toxicology

<b>5</b>	<b>Biochemistry (Clinical)</b> Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
<b>6</b>	<b>Clinical Pathology</b> Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
<b>7</b>	<b>Imaging Sciences</b> Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
<b>8</b>	<b>Clinical protocol development</b>

## II. MEDICAL STATISTICS

**Practical hours - 20**

**Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.**

**Records to be prepared.**

**Distribution of marks (Practical):**

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

## REFERENCE BOOKS:-

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1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1 to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
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Rakesh (2008). Extraction Technologies for Medicinal and Aromatic Plants  
INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste

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### **Research methodology:**

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1. Armitage, P. and Berry, G. (1994) Statistical Methods in Medical Research (3rd ed). Blackwell Science.
2. Armitage P, Berry G, Matthews JNS: *Statistical Methods in Medical Research*. Fourth edition. Oxford, Blackwell Science Ltd; 2002
3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
4. Bradford Hill – Basic Medical Statistics
5. Cambell, M.J. and Machin, D. (1993) Medical Statistics: A Common Sense Approach (2nd ed). Chester: Wiley.
6. Dwivedi S. N., Sundaram K. R and V. Sreenivas (2009). Medical Statistics - Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
7. Gupta S.P. - Fundamentals of statistics, Sultan Chand. Delhi.
8. Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India

9. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
10. Mehdi, B and Prakash A. (2010). Biostatistics in Pharmacology. Practical Manual in experimental and clinical pharmacology. 1st Edition. New-Delhi: Jaypee brothers Medical Publishers
11. Rao, NSN and Murthy, NS. (2008) 2nd Edition. Applied statistics in health sciences. Jaypee Brothers Medical Publishers (P) Ltd. Bengaluru, New Delhi.
12. Rick J Turner and Todd A Durham (2008). Introduction to Statistics in Pharmaceutical Clinical trails. Published by the Pharmaceutical Press- An imprint of RPS Publishing, 1 Lambeth High Street, London SE1 7JN, UK
13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana – A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.D.-AYURVEDA PRELIMINARY**

#### **ROGA NIDANA EVAM VIKRITI VIGYANA (Diagnostic Procedure and Pathology)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

#### **PART A**

**50 Marks**

1. Understanding of Samprapti of diseases in Charaka Nidana Sthana in contemporary context
2. Clinical aspects of Dosha, Dhatu, Upadhatu, Mala, Agni, Ama, Srotas and Indriya
3. Understanding of the role of Trividha Avasthapaka in the vitiation of Dosha
4. Concept of Nanatmaja and Samanyaja Vikara
5. Clinical application of Avarana in diagnosis of various diseases
6. Clinical application of Shatkriyakala in diagnosis of diseases.
7. Clinical and applied aspects of concept of Upadrava and Arista

#### **PART B**

**50 Marks**

1. Ayurvedic interpretation of various laboratory investigations to derive treatment principles.
2. Interpretation of various Rogi Bala and Roga Bala technique to plan Chikitsa Sutra
3. Clinical examination of Deha Bala, Roga Bala, Agnibala And Chetas Bala
4. Knowledge of current diagnostic tools like ECG, X-Ray, CT scan, MRI and USG

## **PRACTICAL**

**100 Marks**

### **Contents**

1. Duty in hospital OPD and IPD.
2. Duty in pathology laboratory.
3. Case taking – 25 cases
4. Performance of pathology and biochemistry practicals – 10 cases
5. Interpretation of ECG, EEG, X-ray, CT-Scan, MRI and USG

### **Distribution of Marks:**

- |  |                    |
|--|--------------------|
| 1. Case record (25 Cases)                                  | - 10 Marks         |
| 2. Bed side clinical case taking                           |                    |
| a. Long case   | - 20 Marks         |
| b. Short case  | - 10 Marks         |
| 3. Laboratory Practicals                                   | - 20 Marks         |
| 4. Interpretation of ECG, EEG, X-ray, CT-Scan, MRI and USG | - 10 Marks         |
| 5. Laboratory experiment record                            | - 10 Marks         |
| 6. Viva-voce   | - 20 Marks         |
| <b>Total</b>   | <b>- 100 Marks</b> |

### **Reference Books:-**

1. Madhav Nidan (Madhukosha Commentary)
2. Relevant portions of Charak Samhita, Sushrut Samhita and Vagbhata
3. Doshakaranatwa Mimamsa - Acharya P.V. Sharma
4. Nadi pariksha - Vb Athavale
5. Nadi Pariksha - GP Upadhyay
6. Rogi Pariksha vidhi - Acharya Priyavrata Sharma
7. Nidan Panchak - Shivcharan Dhyani
8. Vyadhipigyan I and II - Yadav Thrikamji
9. Ayurvediya Roga Vargikaran - Vd. Ramanat Vd. Gurdip Singh
10. Ayurvediya Nidan Evum Chikitsa Ke Siddhanta - Prof. Ram Harsh Singh
11. Clinical methods in Ayurveda - K. R . S. Murthy
12. Parameswarappa's Ayurvediya Vikriti Vigyan & Roga Vikriti Vigyan - Dr. P.S. Byadgi.
13. Oxford Handbook of Clinical Examination and Practical Skills
14. Symptoms & Signs in Clinical Medicine - Chamberlains
15. Hutchison's Clinical Methods
16. Bedside Clinics in Medicine Part- I & II - Kundu
17. Practical Pathology - Dr. K. Uma Chaturvedi
18. Medical Laboratory Technology - R. Sood
19. Clinical Diagnosis and Management by Laboratory methods -Todd, Sanford and Davidson

### **Additional Books for Reference**

1. Roga Vijnan Vikrithi Vijnan : Publication Division, Govt. Ayurveda College, Trivandrum
2. Tridosha theory : Dr.V.V.S. Sastry
3. Glossary of clinical symptoms in Ayurveda: Dr. E. Surendran
3. Clinical Application of Dosha Assessment : Arya Vaidya Sala, Kottakkal

4. Doshabhediyaam-redfined : Arya Vaidya Sala, Kottakkal  
5. Agni - Ayurvedic Concept and Application : Arya Vaidya Sala, Kottakkal  
6. A working model for diagnosis in Ayurveda : Dr. P. M. Madhu  
7. Nirnnaya – Manual of Clinical examinations in Ayurveda : Dr. P. M. Madhu  
8. Aavaranam : Abhilash M, Lakshmi V  
9. Myopathy - An Ayurvedic Perspective : Abhilash M

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**M.D.- AYURVEDA FINAL YEAR**

**ROGA NIDANA EVAM VIKRITI VIGYANA  
(Diagnostic Procedure and Pathology)**

**PAPER - I                      Fundamental Principles of Roganidana                      100 Marks**

Concept of Tridosha and its Pathological implications. 63 permutations and combination of Tridosha. Lina and Stambhita Dosha, their cause and importance in manifestation of Samprapti

Concept of Rakta as a Chaturtha Dosha. Importance of Rakta in the manifestation of diseases

Concept of Ashrayashrayi bhava and its applied utility.

Different types of Dosha Gati.

Causative factors and practical utility of movement of Doshas from Kostha to Shakha and Shakha to Koshtha. Concept of Ashayapakarsha.

Trayo roga marga, their diseases and clinical importance of Roga Marga.

Concept and classification of Avarana, its role in pathogenesis, mode of diagnosis of Avarana and its importance in chikitsa sutra.

Applied aspect of Dhatu Poshana Krama and Dhatu Samvahana. Concept of Margaga and Sthanastha Dhatus.

Conept and applied aspects of Doshapaka and Dhatupaka

Fundamental and applied aspect of Dhatu, Upadhatu and Mala. Diseases developed due to their vitiation (pradoshaja vikara).

Concept and applied aspects of Srotas, their importance in health and diseased conditions.

Concept and applied aspects of Sroto Dushti and Khavaigunya.

Understanding the various srotas which are not included in classical list of srotas but enumerated while describing the samprapti of diseases.

Description of Dosha-Dushya-Sammurchhana, Concept of Prakriti Sama Samaveta and Vikriti Vishama Samaveta Sammurchhana. Importance of Dosha-Dushya-Sammurchhana in Diagnosis and treatment.

Concept of Vikara vighata bhavabhava prativisesha.

Concept of Agni and its role in manifestation of health and disease.

Concept and pathogenesis of Ama. Contemporary interpretation of Ama and its role in pathogenesis.

Sama, Nirama stages of Dosha, Dhatu and Mala.

Understanding Samprapti of Santarpanottha and Apatarpanottha Vyadhi

Detailed classification of diseases as described in Ayurveda. Knowledge of ICD and DSM classification.

Detailed understanding of Nidan Panchaka with their classification and clinical importance.

Relation between 'Hetu & Lakshana' and 'Samprapti & Lakshna'.

Explanation and applied aspects of Kriyakala and its utility in diagnosis and treatment.

Importance of Upadrava, Arishta and Sadhyasadyata and Udarka.

Natural History of the Diseases, concept of vyadhisankara in Ayurveda

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## PAPER – II

## Roga Vigyana

100 Marks

Knowledge of classical Samprapti of following diseases with interpretation of Nidana Panchaka including Upadrava, Arishta and Sadhyasadyata and Chikitsa Sutra. Knowledge of commonly occurring diseases of the respective systems mentioned in contemporary medicine and their Ayurvedic interpretation.

1. Diseases of Pranavaha srotas- Kasa - Shwasa - Hikka – Urahkshata – Shosha – Rajayakshma and Ayurvedic understanding of common clinical entities like Pneumonia, Pleural effusion, Bronchitis, Bronchiectasis, Pulmonary Tuberculosis, Bronchial Asthma.
2. Diseases of Annavaha- Pureeshavaha Srotas- Agnimandya - Ajirna - Aruchi- Chhardi, Amlapitta- Shoola, Grahani –Gulma- Udara Roga –Vibandha, Atisara – Pravahika along with various clinical presentations. Ayurvedic understanding of common clinical entities like Peptic Ulcer, Irritable Bowel Syndrome, Diarrhoea, Dysentery, Constipation, ulcerative colitis.
3. Diseases of Udakavaha Srotas- Trishna, Daha and knowledge of water and electrolyte imbalance disorders
4. Diseases of Rasavaha Srotas - jwara and Ayurvedic understanding of common clinical entities like various types of Fever- Malaria, Typhoid, viral fevers. Pandu, Amavata, Hridroga, Shotha and Ayurvedic understanding of common clinical entities like Anaemia & its Classification, Rheumatic fever, Rheumatoid Arthritis, Angina, Ischaemic Heart Disease, Hypertension, Myocardial Infarction, Congestive cardiac failure.
5. Diseases of Raktavaha Srotas- Kamala - Raktapitta - Vatarakta – Kroshtukaseersha - Shitapitta – Maha Kushta – Visarpa – Shwitra and Kshudra Kushta and Ayurvedic understanding of common clinical entities like jaundice, hepatitis, bleeding disorders, Gout, Thrombo Angitis Obliterans (TAO), Deep Vein Thrombosis (DVT), Leukaemia, Thalessemia, Sick cell Anaemia. Introduction to Urticaria, Psoriasis, Eczema, Pemphigus, Herpes.
6. Diseases of Mamsavaha srotas- Introduction to Granthi, Arbuda, Galaganda and Arsha. Ayurvedic understanding of all types neoplasia and Thyroid diseases.
7. Diseases of Medovaha srotas- Sthoulya - Karshya – Prameha and Ayurvedic understanding of common clinical entities like Obesity and Diabetes Mellitus.
8. Diseases of Asthi - Majjavaha srotas- Sandhigatavata, Introduction to Asthi-majjaparipaka, Asthigata Vidradhi and Ayurvedic understanding of common clinical entities like Osteo-Arthritis, Osteomyelitis, Osteoporosis.
9. Vatavyadhi-Akshepaka - Apatanaka - Ardita - Pakshaghata – Gridhrasi – Viswachi, Avabahuka, Manyasthambha – Katigraha-Pangutwa- Khanja-Khalwee and Ayurvedic understanding of common clinical entities like Hemiplegia, Parkinson's disease, Lumbago-Sciatica syndrome, Bell's Palsy, Ankylosing Spondylitis, MND and other commonly occurring neurological diseases.

10. Diseases of Sukravaha srotas- Klaibya and Vandhyatva and understanding of male and female Infertility, Impotence.
11. Diseases of Mutravaha srotas -Mutrakrichha – Mutraghata, Ashmari and Ayurvedic understanding of common clinical entities like Urinary Tract Infection, Urolithiasis, Nephropathies and Renal failure.
12. Diseases of Swedavaha srotas-knowledge of khalitya, Palitya and Cosmetology.
13. Diseases of Manovaha Srotas - Vishada, Udvega, Bhaya, Bhrama, Anidra, Mada, Murchha, Sanyasa, Apasmara, Unmada, Atatwabhinivesha and Ayurvedic understanding of common clinical entities like Depression, Anxiety neurosis, Phobia, Personality disorders.
14. Indriya Pradoshaja Vikara.
15. Jara janya Vyadhi: Alzheimer's Disease
16. Concept and tools for the study of Anukta Vyadhi (Unexplained and newly emerging diseases).
17. Understanding the concept of karmaja vyadhi

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### **PAPER - III**

### **Pariksha Vigyana**

**100 Marks**

1. Introduction to Clinical methods and technique for the study of clinical examination
2. Importance of medical history taking and its importance in clinical medicine.
3. Aims, Objectives and Methods, applied aspects and importance of various Rogi and Roga Pariksha as per classics.
4. Srotas Pariksha, Shadanga Pariksha vis-à-vis general & systemic examination of patient.
5. Interpretation of Charakokta trividha pramana pariksha and Sushrutokta shadvidha pariksha with clinical methods mentioned in modern medicine.
6. Interpretation and use of ashtasthana nirikshana along with use of current tools as per Ayurveda.
7. Charakokta dashavidha and Sushrutokta Dwadashavidha pariksha along with the use of modern supportive tools for understanding of rogibala and roga bala concept to derive chikitsa sutra
8. Ayurvedic interpretation of all relevant findings of modern clinical examinations, various Laboratory and other Diagnostic tools.
9. Understanding of diagnostic procedures in medical emergencies.
10. Concept of Good clinical practice in Ayurveda and modern medicine.
11. Knowledge of standard clinical laboratory set up useful for Ayurvedic practice.
12. Knowledge of Ancillary common laboratory investigations for diagnosis of diseases, their methods, normal and abnormal values, factors influencing values and their Ayurvedic interpretations & clinical significance as mentioned in practical syllabus.
13. Importance of Bio markers and their utility in clinical researches
14. Update knowledge of emerging diagnostic tools and technologies.
15. Knowledge of various Ayurvedic diagnostic softwares/programmes available.
16. Avayava Pariksha – Radio- Imaging Techniques, Sonological Techniques, ECG, EEG etc and their clinical interpretation.

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1. Introduction to pathology and technique for the study of pathology
2. Cell injury and cellular adaptations
3. Immunopathology including amyloidosis and its interpretation with the concept of Ojas vis-à-vis Bala
4. Concept of Shotha versus Inflammation, oedema and healing
5. Derangement of Homeostasis and Hemodynamic disorders
6. |General character and classification of Neoplasia
7. Upasargajanya Vyadhi (Communicable diseases)- Romantika – Masurika – Upadamsha – Phirang and introduction to Syphilis, AIDS, Leprosy, Tuberculosis
8. Detail study of Krimi Vigyanam versus infectious and parasitic diseases along with their mode of infection and life cycle
9. Concept of Snayuka, Shleepada and introduction to Filariasis and classification of common parasites.
10. Concept and applied aspects of Janapadodhvamsa and Environmental diseases
11. Nutritional disorders
12. Concept of genetic diseases and its interpretation in terms of Bija dosha
13. Knowledge of common Bacteria, Virus, Parasites, Fungi and their classification with their disease processes, Nutrition requirements, media and methods for culture and sensitivity

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#### **PRACTICAL DEMONSTRATION AND HANDS ON EXPERIENCE**

1. Regular posting in Roga Nidana O.P.D.
2. Regular posting in Roga nidana I.P.D.
3. Regular posting in Laboratories
4. Regular posting in other departmental units and Educational Tour to update current medical knowledge
5. Laboratory record – maintenance of observation diary and laboratory record book.
6. Experience in conducting following laboratory investigations for diagnosis of diseases and their methods
  - a) Hematological, Biochemical and Serological measures, Peripheral blood film examination
  - b) Rapid diagnostic techniques.
  - c) Screening test for bleeding disorders- Platelet Count, bleeding time (BT), Clotting time (CT), Prothrombin time (PT).
  - d) Blood grouping - ABO system, Rh typing (Rhesus system)
7. Urine Examination
  - a. Ayurveda anusara mutra pariksha.
  - b. Physical Examination, Chemical Examination, and Microscopic Examination
  - c. Dipstix examination
8. Stool Examination
  - i. Ayurveda anusara purisha pariksha-Physical examination - Sama-Nirama Pariksha
  - ii. Microscopic and macroscopic examination of stool
9. Sputum Examination
  - i. Ayurveda pariksha anusara sthivana.

- ii. Physical, Chemical and Microscopic Examination of the sputum.
10. Semen examination
  - 1) Ayurvediya anusara Retas pariksha.
  - 2) Semen examination & clinical interpretation
11. Biochemical tests related to various organ panels- Liver, Kidney, Heart, Thyroid, Pituitary and Bones.
12. Knowledge of different staining techniques in microbiology.
13. Knowledge of Sero-immunological Investigations: RA, Widal test, ASLO titer, ANA, Etc
14. Physical, chemical, microscopic, biochemical and bacteriological tests for various kinds of body aspirates
15. Knowledge of histopathological techniques.

### **BEDSIDE PRACTICAL /CLINICAL METHODS**

1. Expertise in clinical methods (General and Systemic Examination).
2. Practical knowledge of examination of Roga based on Pancha Nidan.
3. Practical knowledge of instruments used for clinical examination.
4. Practical records of clinical examination of at least 30 long cases in I.P.D.
5. Practical records of clinical examination of at least 50 short cases.
6. Practical knowledge of ECG, USG and Imaging techniques and their clinical interpretation
7. Understanding of various Ayurvedic diagnostic softwares/programmes available like Ayu soft, Rudra, Ayut Nidana etc.

### **PATTERN OF EXAMINATION**

Name of Paper	Hours of training	Marks
Paper I	100	100
Paper II	100	100
Paper III	100	100
Paper IV	100	100

**Practicals:** Hospital/Laboratory duties at least 4 Hours per day

**Total 200**

1. Observation Diary	- 05 Marks
2. Laboratory record	- 05 Marks
3. Short Case (including Case Record)-	10 Marks
4. Long Case (including Case Record) -	15 Marks
5. Laboratory Work	- 20 Marks
6. Thesis Presentation	- 20 Marks
7. Viva Voce	- 25 Marks
<b>Total</b>	<b>- 100 Marks</b>

### **REFERENCE BOOKS:**

1. Charaka Samhita with Various Commentaries
2. Madhava Nidana with various commentaries
3. Abhinava Vikriti Vigyana - Acharya Raghuvir Prasad Dwivedi
4. Doshakaranatwa Mimamsa - Acharya P.V. Sharma
5. Nadi Darshan - Vd. Tara Shankar Mishra
6. Nadi Vigyanam - Vidyotini Hindi Tika

- |  |                                     |
|--|-------------------------------------|
| 7. Nadi Vigyan   | - Shri Satya Dev Vashisht           |
| 8. Nadi Vigyan   | - Gangadhar Tika                    |
| 9. Nadi pariksha   | - Vaidya VB Athavale                |
| 10. Nadi Pariksha  | - GP Upadhyay                       |
| 11. Rogi Pariksha vidhi  | - Acharya Priyavrata Sharma         |
| 12. Roga Vigyan  | - Dr.Vinay Kumar                    |
| 13. Siddanta Nidan   | - Gananatha Sen                     |
| 14. Ayurvediya Roga Vargikaran   | - Vd. Ramanath and Vd. Gurdip Singh |
| 15. Ayurvediya Nidan Evum Chikitsa Ke Siddhanta                        | - Prof. Ram Harsh Singh             |
| 16. Relevant portions of Charak Samhita, Sushrut Samhita and Vagbhata  |                                     |
| 17. Clinical methods in Ayurveda                                       | - K. R . S. Murthy                  |
| 18. Parameswarappa's Ayurvediya Vikriti Vigyan and Roga Vikriti Vigyan | - Dr. P.S. Byadgi.                  |
| 19. Nidan Panchaka   | - Prof SC Dhyani                    |
| 20. Samprapti lakshana yoh sambhandah                                  | - K.Sadashiva Sharma                |
| 21. Clinical Diagnosis in Ayurveda in Roga Nidana and Vikriti Vigyana  | - Vaidya Vasant Patil               |
| 22. Oxford Handbook of Clinical Examination and Practical Skills       | - Oxford Handbooks                  |
| 23. Symptoms & Signs in Clinical Medicine                              | - Chamberlains                      |
| 24. Clinical Methods   | - Hutchinson's                      |
| 25. Bedside Clinics in Medicine Part- I & II                           | - Kundu                             |
| 26. Practical Pathology  | - Dr. K. Uma Chaturvedi             |
| 27. Medical Laboratory Technology                                      | - R. Sood                           |
| 28. Clinical Diagnosis and Management by                               | - Todd, Sanford and Davidson        |
| 29. Laboratory methods   | - Robbins                           |
| 30. Basic Pathology  | - Kumar, Abbas, Fausto at           |
| 31. Text Book of Pathology   | - William Boyds.                    |
| 32. Text Book of Pathology   | - Harsh Mohan                       |
| 33. Text Book of Pathology   | - Dey and Dey                       |
| 34. Text Book of Parasitology  | - Ramnik Sood                       |
| 35. Clinical Pathology and Bacteriology                                | - S.P. Gupta                        |
| 36. A Text Book of Microbiology  | - Ananthanarayana, Panikar          |

#### **Additional Books for Reference**

- |   |  |
|---|--|
| 1. Roga Vijnan Vikrithi Vijnan                            | : Publication Division, Govt. Ayurveda College, Trivandrum |
| 2. Tridosha theory  | : Dr.V.V.S. Sastry   |
| 3. Glossary of clinical symptoms in Ayurveda:             | Dr. E. Surendran   |
| 3. Clinical Application of Dosha Assessment               | : Arya Vaidya Sala, Kottakkal                              |
| 4. Doshabhediyaam-redfined                                | : Arya Vaidya Sala, Kottakkal                              |
| 5. Agni - Ayurvedic Concept and Application               | : Arya Vaidya Sala, Kottakkal                              |
| 6. A working model for diagnosis in Ayurveda              | : Dr. P. M. Madhu  |
| 7. Nirnnaya – Manual of Clinical examinations in Ayurveda | : Dr. P. M. Madhu  |
| 8. Aavaranam  | : Abhilash M, Lakshmi V                                    |
| 9. Myopathy - An Ayurvedic Perspective                    | : Abhilash M   |

#### **2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clasue No. 2.10

**2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**  
Given under Clause No. 2.10

**2.13 Records**

Relevant records are to be maintained

**2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.
3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.
4. For approving the title a scrutiny Committee shall be constituted by the University.
5. The University should display the approved synopsis of dissertation on their website.
6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.
7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.
9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.
10. The dissertation shall consist critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.
11. The dissertation shall consist of not less than forty thousand words.
12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.
13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.

14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.

15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.

16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.

17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.

18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

**2.20 Journals**

**Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X

16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamya@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

#### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in/Open Access Peer Reviewed E-Journal*. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

## **3. EXAMINATIONS**

### **3.1 Eligibility to appear for examinations [including Supplementary]**

A. Preliminary examination:

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

B. Final examination:

For appearing final year examination 80 % attendance in each theory and practical subjects in 2 nd & 3 rd years separately is required

### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

#### **Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

#### **Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

## **SCHEDULE OF EXAMINATIONS**

a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.

- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

### **CONDUCT OF EXAMINATION**

- 1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
- 2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.
- 3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.  
 The pattern is long essay for 20 marks -one question  
 Short essay 10 marks - Eight questions  
 Total 9 questions for 100 marks

#### **3.4 Papers in each year**

Given under clause No.2.10

#### **3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

#### **3.6 Model question paper for each subject with question paper pattern**

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Roga Nidana evam Vikriti Vigyana)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the samprapti of raktapitta and correlate it with the clinical conditions in modern medicine

**Short Essays**

**(8x10=80)**

2. What are upadhatus? Explain the role of upadhatus in the samprapti of disease with examples
3. Explain avasthapaka and its role in vitiation of doshas
4. Differentiate between nanatmajs vikara and samanya vikara
5. Explain the role of laboratory investigations in neurological diseases to formulate treatment protocol
6. Explain “how agnidushti will cause diseases
7. Explain the methods to assess the roga bala
8. Explain trividhsbala and correlate it with vyadhikshamatwa
9. Discuss the various indications of ultrasonography and mention the preparation of a patient before U.S.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Roga Nidana evam Vikriti Vigyana)  
(..... scheme)**

**Paper I – Fundamental Principles of Roga Nidana**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe dosha- dooshya samurchana and its importance in diagnosis & treatment.

**Short Essays**

**(8x10 = 80)**

2. Role of avarana in the pathogenesis of disease
3. Explain rogamarga in detail and its clinical importance
4. Discuss doshapaka & dhatupaka
5. Explain the role of Ama in annavahasroto vikara
6. Discuss upadhatu pradoshaja vikara
7. Explain apatarpanottha vikaras
8. Explain the role of nidana in causation of diseases
9. Clinical importance of upadrava & arishta

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Roga Nidana evam Vikriti Vigyana)  
(..... scheme)**

**Paper II – Roga Vignana**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe vyadhi and its classification in detail. Enumerate ICD and DSM classification of diseases.

**Short Essays**

**(8x10 = 80)**

2. Explain the samprapthi of rajayakshma with its contemporary relevance
3. Role of shatkriyakala in manifestation of Amavata
4. Describe the role of medovahasrotodushti in the pathogenesis of prameha
5. Discuss indriyapradoshaja vikara in detail
6. Critically analyse the role of doshagathi in kamala
7. Concept of anukta vyadhi in newly emerging diseases
8. Explain the role of manovaha srotas in unmada
9. Analyse the samprapthi of pandu with reference to anemia

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Roga Nidana evam Vikriti Vigyana)  
(..... scheme)**

**Paper III – Pariksha Vigyana**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain trividha pareeksha and how the modern instruments can be incorporated in trividha pareeksha.

**Short Essays**

**(8x10 = 80)**

2. Laboratory investigations & radio imaging techniques in rheumatology
3. Laboratory investigations in bleeding disorders
4. Site the scheme of chest X ray reading.
5. Investigation scheme in MI
6. What are ashtasthana pareeksha? How far it is useful in the present era for diagnosis.
7. What are renal function tests? How they help in the diagnosis of mootravahasrotogata vikaras.
8. Role of imaging technique in CVA
9. What are the main investigations in Gasto-intestinal disorders and the scheme of examination.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Roga Nidana evam Vikriti Vigyana)  
(..... scheme)**

**Paper IV – Vikriti Vigyana and Jivanu Vigyana**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain hypersensitivity

**Short Essays**

**(8x10 = 80)**

2. Explain shock
3. Mention reversible cell injury
4. Explains the methods of Identification of bacteria with its morphological charaters
5. Descrie the morphology, lifecycle, pathogenecity and laboratory diagnosis of Entamoeba histolytica
6. Explain superficial mycoses
7. Define janapadodhwamsa and its relevance
8. Detail the general characteristics of neoplasia
9. Importance of trividha bala in vyadhikshamatva

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

**3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners

should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

### **4. INTERNSHIP**

Not applicable

### **5. ANNEXURES**

#### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended

for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study
7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman
8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.

12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

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## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Vachaspati –  
Rasa Shastra evam Bhaishajya Kalpana  
(M.D. (Ayurveda) - Pharmaceuticals)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## **2. COURSE CONTENT**

### **2.1 Title of course and description:**

Ayurveda Vachaspati – Rasa Shastra evam Bhaishajya Kalpana (M.D. (Ayurveda) – Pharmaceuticals)

### **2.2 Objectives:**

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### **2.3 Medium of instruction:**

The medium of instruction of the course is English

### **2.4 Course outline**

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### **2.5 Duration**

3 years.

### **2.6 Subjects**

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### **2.7 Total number of hours**

Given under curriculum Clause No 2.10

### **2.8 Branches if any with definition**

Not applicable

## **2.9 Teaching learning methods**

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## **2.10 Content of each subject in each year**

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**

**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
- 5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati  
Aushadhi-yog Parikshana Paddhati  
Swastha, Atura Pariksha Paddhati  
Dashvidha Parikshya Bhava  
Tadvidya sambhasha, vadmarga and tantrayukti
- 6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**
- 7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

  - a. Panchamahabhuta and tridosha.
  - b. Concepts of rasa, guna, virya, vipak, prabhav and karma
  - c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.
- 8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.
- 9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
- 10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**
- 11. Introduction to latest Trends in Drug Discovery and Drug Development**
  - Brief information on the traditional drug discovery process
  - Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
  - Brief introduction to the process of Drug development.
- 12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies

Randomized Controlled Trials (RCT) & their types

Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies –

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
National Pharmacovigilance Programme for ASU drugs.
14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

1. Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
2. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
3. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
4. Measures of Central tendency – Mean, Median and Mode.
5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
6. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
7. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
8. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
9. Measures of Central tendency – Mean, Median and Mode.

**10. Variability:** Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation

**11. Non parametric methods:** Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.

Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:** Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography:** computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

### **PRACTICAL**

**100 Marks**

**Teaching hours – 120**

### **I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and

	toxicology
5	Biochemistry (Clinical) Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
6	Clinical Pathology Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
7	Imaging Sciences Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
8	Clinical protocol development

## II. MEDICAL STATISTICS

Practical hours - 20

Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.

Records to be prepared.

Distribution of marks (Practical):

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

1. Aushotosh Kar "Pharmacognos & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
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13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

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8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
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10. Qadry JS and Qadry S Z., Text book of Inorganic Pharmaceutical and Medicinal Chemistry, B. S. Shah Prakashan, Ahmedabad.
11. Quality Control Methods for Medicinal Plant Material. Reprint (2002). WHO Geneva.
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13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
15. Stahl E., Thin Layer Chromatography - A Laboratory Handbook, Springer Verlag, Berlin.

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### **Biochemistry and Laboratory techniques:**

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
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4. David Sultan (2003). Text book of Radiology and Imaging, Vol-1, 7th Edition.
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6. Harold Varley. Practical Clinical Bio-chemistry
7. Kanai L.Mukherjee. Clinical Pathology:, Medical Laboratory Technology Vol. I.Tata McGrawHill 1996, New Delhi.
8. Gradwohl, Clinical Laboratory-methods and diagnosis, Vol-I
9. Clinical Biochemistry -Sabitri Sanyal, Clinical Pathology, B.I.Churchill Livingstone (P) Ltd, New Delhi.2000.
10. Satyanarayanan,U. Essentials of Biochemistry, Books and allied(P) Ltd.2002
12. Zubay, G.L. Biochemistry, W.M.C. Brown Publishers, New York 1998.
13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
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5. Day R.A. How to write a scientific paper. Cambridge University Press.
6. Cooray P.G. Guide to scientific and technical writing.
7. Deepika Chawla and Neena Sondhi. (2011). Research Methods- Concepts and cases. New Delhi: Vikas Publishing House.
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10. Kumar, R. 2005. *Research Methodology: a Step-by-Step Guide for Beginners*, 2<sup>nd</sup> ed. Thousand Oaks, CA, London: Sage Publications.
11. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
12. Relevant portions of Ayurvedic Samhitas and other texts

### **Drug research and development:**

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5. Natural products isolation. (2006) 2nd ed. / edited by Satyajit D. Sarker, Zahid Latif, Alexander I. Gray. (Methods in biotechnology; 20). Includes bibliographical references and index. Humana Press Inc. ISBN 1-58829-447-1 (acid-free paper) – ISBN 1-59259-955-9 (eISBN)
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<http://browse.oecdbookshop.org/oecd/pdfs/free/9740801e.pdf>(latest version)
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14. Ravindran R.: X-Pharm (Software), Indian Journal of Pharmacology, *JIPMER, Pondicherry.*

### **Biotechnology and Bio-informatics:**

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11. [www.strobe-statement.org](http://www.strobe-statement.org)
12. [www.icmr.nic.in](http://www.icmr.nic.in)

### **Clinical Evaluation:**

1. CDSCO, Good Clinical Practices For Clinical Research in India, Schedule Y (Amended Version – 2005), <http://cdsco.nic.in/html/GCP1.html>
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9. William C. Scheffer Introduction to Clinical Researchs

### **Medical Statistics:**

1. Armitage, P. and Berry, G. (1994) Statistical Methods in Medical Research (3rd ed). Blackwell Science.
2. Armitage P, Berry G, Matthews JNS: *Statistical Methods in Medical Research*. Fourth edition. Oxford, Blackwell Science Ltd; 2002
3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
4. Bradford Hill – Basic Medical Statistics
5. Cambell, M.J. and Machin, D. (1993) Medical Statistics: A Common Sense Approach (2nd ed). Chester: Wiley.
6. Dwivedi S. N., Sundaram K. R and V. Sreenivas (2009). Medical Statistics -

- Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
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  8. Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India
  9. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
  10. Mehdi, B and Prakash A. (2010). Biostatistics in Pharmacology. Practical Manual in experimental and clinical pharmacology. 1st Edition. New-Delhi: Jaypee brothers Medical Publishers
  11. Rao, NSN and Murthy, NS. (2008) 2nd Edition. Applied statistics in health sciences. Jaypee Brothers Medical Publishers (P) Ltd. Bengaluru, New Delhi.
  12. Rick J Turner and Todd A Durham (2008). Introduction to Statistics in Pharmaceutical Clinical trails. Published by the Pharmaceutical Press- An imprint of RPS Publishing, 1 Lambeth High Street, London SE1 7JN, UK
  13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
  14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
  15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana - A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.D.-AYURVEDA PRELIMINARY**

#### **RASA SHASTRA AND BHAISHAJYA KALPANA (Iatrochemistry & Pharmaceuticals Science)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

**PART A**

**50 Marks**

1. Fundamental principles of Rasa Shastra and Bhaishajya Kalpana, introduction to Rasachikitsa, Ashuddha and Apakwa Bhasma- sevan Dosha and its management, introduction to Aushadha Sevan Kaal and Prayoga Marga (routes of administration).
2. Introduction to basic principles of Aushadha Yoga (formulations).
3. Classification of Rasa Dravya - concept and relevance.
4. Introduction to principles of Aushadha Nirmana, concept of Shodhan, Marana, Jarana, Murcchhana, Sattvapatan and Amritikarana.
5. Concept of Kashaya, Panchavidha Kashaya and other Kalpana.
6. Concept of Rasashala, Rasa Mandapa with introduction to pharmacy in accordance with the Good Manufacturing Practices (GMP).
7. Critical study of Rasa Ratnasamuchchaya, Rasendra Chintamani, Rasa

Tarangini, Sharngadhara Samhita, Chakradutta and Bharat Bhaishajya Ratnakara with special reference to Aushadha-Nirman.

## **PART B**

**50 Marks**

1. Introduction to methods of analytical, toxicity, experimental and clinical validation of classical and proprietary Ayurvedic formulations.
2. Introduction to new dosage forms.
3. Introduction to advance instruments of analysis like XRD, XRF, SEM-E-Dax, ICP analysis, Chromatography: TLC, gas chromatography, HPTLC, concept of Nanotechnology and its relevance to Aushadha-Nirman.
4. Concept of Pharmacopoeia and Formulary with introduction of 'The Ayurvedic Pharmacopoeia of India' (API) and 'The Ayurvedic Formulary of India' (AFI).
5. Introduction to databases of medicinal plants published by CCRAS, ICMR and others.

## **PRACTICAL**

**100 Marks**

### **Contents**

1. Shodhan, Marana, Amritikarana of Rasa Dravya (10 practicals)
2. Preparation of different dosage forms (10 forms)
3. Pharmacopoeial standards of raw and prepared drugs (20 practicals)

### **Raw Materials**

#### **1. Minerals and Metals**

##### **Mineralogical**

##### **Identification**

1. Physical form - Crystal and Amorphous
2. Hardness on Moh's scale
3. Brittleness test
4. Fracture and Cleavage
5. Streak test
6. Luster

#### **2. Plant Material**

##### **Macroscopic and Microscopic examination**

1. Organooleptic testing
2. Estimation of Foreign materials
3. Microbial load
4. Moisture content
5. Determination of ash value - total, water soluble and acid Insoluble ash
6. Specific gravity
7. Solubility- water and alcohol
8. Extract values- water and alcohol
9. TLC
10. Determination of optical density
11. Refractive index
12. Aflatoxins
13. Limit tests for heavy metals
14. pH estimation

## **Prepared dosage forms:**

### **1. Solid dosage forms**

#### **Rasaushadhi**

- a) Bhasma and Pishti Pariksha
- b) Determination of Particle size
- c) Limit tests for heavy metals
- d) Determination of moisture content, specific gravity, pH and acid value.

#### **Kasthaushadhi**

##### **a. Powders (Churna)**

1. Particle size
2. Bulk density
3. Solubility
4. Estimation of Foreign material
5. Microbial load
6. Moisture content
7. Determination of ash value - total, water soluble and acid insoluble ash
8. Solubility - water and alcohol
9. Extract values - water and alcohol
10. TLC
11. Determination of Optical density
12. Refractive Index
13. Aflatoxins
14. Limit tests for Heavy metals
15. pH Value estimation

##### **b. Tablets**

1. Uniformity in weight and size
2. Tablet hardness
3. Tablet friability
4. Tablet disintegration
5. Tablet dissolution

##### **c. Semisolid dosage forms**

1. Moisture content
2. Sugar content
3. Microbial load

##### **d. Liquids**

1. pH value
2. Specific gravity
3. Determination of refractive index
4. Acid value
5. Viscosity
6. Saponification value
7. Iodine value

#### **Note:**

- All practicals should be performed in accordance with Authoritative Text Books of Schedule-I of D.C.Act-1940.

- All practicals related to Pharmacopoeial Standards should be performed in accordance with Methods Published in Protocol for testing of ASU Medicines and Laboratory Guidelines for the Analysis of Ayurveda & Siddha Formulations published by Deptt. of AYUSH, Government of India.

#### **Distribution of Marks:**

1. Practical Record Book	- 10 Marks
2. Practical related to Preparation of Drugs	
a. Major practical- one	- 20 Marks
b. Minor practical- one	- 10 Marks
3. Drug analysis	
a. Major practical- one	- 20 Marks
b. Minor practical- one	- 10 Marks
4. Spotting	- 10 Marks
5. Viva-voce	- 20 Marks
<b>Total</b>	<b>- 100 Marks</b>

#### **Reference Books:-**

1. Rasahridaya Tantra
2. Rasarnava
3. Rasaratna Samuccahaya
4. Ayurved Prakasha
5. Rasendrachudamani
6. Rasendra Chintamani
7. Rasatarangini
8. Rasapraksha Sudhakar
9. Rasamrita
10. Rasa Chandanshu : CCRAS Publication
11. Sharangadhara Samhita
12. Sharangadhara Darpan (BP Pandey)
13. Bhavaprakasha
14. Yoga Ratnakara
15. Bhaishajya Ratnavali
16. Siddha Bhaishajya Manimala
17. Bharat Bhaishajya Ratnakara
18. Rasayoga Sagara
19. Siddha Bhaishajya Manimala
20. Sahasrayoga
21. Siddha Yoga Sangraha – Yadavaji Trikamji Acharya
22. Vaidyaka Paribhasha Pradeepa
23. Ayurvediya Aushadhikarana – Puranik and Dhamanakar
24. Dravyaguna Vijnan Part - 1 and 2 - Yadavji Trikamji
25. Chakradatta - Ratnaprabha, Relevant Parts from Charaka Samhita, Sushruta Samhita, Kashyapa Samhita, Ashtanga Sangraha, Ashtanga Hridaya,
26. Remington: Science and Practice of Pharmacy
27. Theory and Practice of Industrial Pharmacy – Leon Lachman *et al*
28. Clinical Pharmacology - KD Tripathi
29. Clinical Pharmacology, Lawrence Benette
30. Drug Discovery and Evaluation (Pharmacological assays) HG Vogel
31. Pharmacological Basis of therapeutics – Goodman and Gilman
32. Data Base of Medicinal Plants of CCRAS

33. Quality and Standards of Medicinal Plants – ICMR publication
34. Quality Control of Ayurvedic Drugs – PLIM, Gaziabad
35. Ayurvedic Pharmacopeia of India
36. Ayurvedic Formulary of India
37. Indian Pharmacopeia
38. British Pharmacopeia
39. United States Pharmacopeia
40. Pharmacopeia Codex
41. Current Good Manufacturing Practices
42. Drugs and Cosmetic Act 1940 and Rules 1945 with latest amendments
43. Drugs and Magic remedies (Objectionable advertisement) Act-1954
44. Prevention of Food Adulteration (PFA) act
45. Laws pertaining to Narcotics
46. Factory and Pharmacy Acts
47. Consumer Protection Act -1986
48. Brief information on the peer reviewed journals, official websites and other official search engines along with their links (related with the subject)
49. Rutleys Elements of Mineralogy
50. Bhasma Vigyaniam
51. Kupipakva Vigyaniam
52. Anupana Manjari

#### **Additional Book for Reference**

1. Rasasastra : Publication Division, Govt. Ayurveda College, Trivandrum

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### **M.D.- AYURVEDA FINAL YEAR**

#### **RASA SHASTRA AND BHAISHAJYA KALPANA (Iatrochemistry & Pharmaceuticals Science)**

**PAPER - I**

**Rasa Shastra**

**100 Marks**

#### **PART A**

1. History and Chronological evolution of Rasashastra, concept of Raseshwara darshan. Fundamental Principles of Rasashastra Technical terminologies (Paribhasha) used in Rasa shastra.
2. Detailed knowledge of ancient and contemporary Yantropakarana and their accessories used in aushadhikaran and their contemporary modification such as yantras, mushas, putas, Koshtis, bhrashtis, muffle furnaces and other heating appliances, ovens, driers etc. used in manufacturing of Rasaushadhis in small scale and large scale along with their applications.
3. Study of Samskara, Role of agni (Heat), jala and other dravas (water and other processing liquids), kala (Time span), paatra (container) etc. and their significance in aushadhikarana.
4. Concept of Bhavana, study of Mardana and its significance and knowledge of ancient and contemporary grinding techniques.
5. Detailed Knowledge of different procedures of Shodhana, Jarana Murchana and Marana, concept of Puta, definition, types and specifications of different Putas. Significance of

different Putas in relation to Bhasmikanarana and therapeutic efficacy of dravya under process. Bhasma pariksha vidhi and its significance in relation to contemporary testing procedures. Amritikaran and Lohitikarana.

6. Detailed knowledge of Satva and Druti, Satva shodhan, mrudukaran and Maran of Satva, its significance, in relation to therapeutic efficacy of dravya under process.

7. Concept of Pratinidhi dravya and discussion on controversial drugs.

## PART B

1. Detailed ancient and contemporary knowledge of Parada and its compounds with reference to source, occurrence, physico-chemical characterization, graahya agraahyatva, Parada dosha, Parada gati, Parada shodhan, Study of Ashta sanskara, ashtadasa sanskara etc., Hingulottha Parada. Concept of Parada jaran, moorcchana, bandhan, pakshaccheda and marana etc. Therapeutic properties and uses of Parada.

2. Detailed ancient & contemporary knowledge with Geochemical / mineralogical / biological identification, source, occurrence, physico-chemical characterization, graahya-agraahyatva, Shodhan Maranadi vidhi and therapeutic properties and uses of dravyas etc. included in Maharasa, Uparasa, Sadharana rasa, Dhatu, Upadhatu, Ratna, Uparatna, Visha, Upavisha, Sudha varga, Lavana varga, Kshara varga, Sikata varga and other miscellaneous drugs used in Rasashastra.

3. Detailed knowledge of manufacturing, pharmacopeial standards, storage, shelf life, therapeutic efficacy, dose, anupana, vikarashanti upaya and development of technology with Standard Operating Procedures of processing, standardization, quality control of Bhasmas and Pishtis

**Bhasma** - Abhraka Bhasma, Svarnamakshika Bhasma, Kasis Bhasma, Svarna Bhasma, Rajata Bhasma, Tamra Bhasma, Loha Bhasma, Mandur Bhasma, Naga Bhasma, Vanga Bhasma, Yashad Bhasma, Trivanga Bhasma, Pittala, Kamsya and Varthaloha Bhasma, Shankha Bhasma, Shukti Bhasma, Kapardika Bhasma, Godanti Bhasma, Praval Bhasma, Mrigashringa Bhasma, Mayurpiccha Bhasma, Kukkutand twak Bhasma, Hiraka Bhasma, Manikya Bhasma.

**Dravaka** - Shankha Dravaka

**Pishti** - Praval pishti, Manikya Pishti, Mukta pishti, Jahara mohara pishti, Trinakanta mani pishti etc.

4. Detailed knowledge of manufacturing, storage, shelf life, pharmacopeial standards, therapeutic efficacy, dose, anupana and development of technology with Standard Operating Procedures of processing, standardization and quality control of Kharaliya rasa, Parpati, Kupipakva rasa and Pottali rasa.

5. Study of classical texts with respective commentaries and special emphasis on Rasarnava, Rasahridaya tantra, Rasa Ratna Samucchaya, Rasendra Chintamani, Rasendra Chudamani, Rasa Ratnakara, Rasadhyaya, Rasa Kamdhenu, Anandkanda, Siddha Bhesaja Manimala, Ayurveda Prakash, Rasatarangini, Bhaishajya Ratnavali, Rasamritam etc. and the books mentioned in the Schedule I of D & C Act – 1940. Relevant portions of Brihatrayi.

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1. History and Chronological evolution of Bhaishajya Kalpana, Concept of Bhesaja and Aushadh, fundamental principles of Bhaishajya Kalpana. Technical terminologies (Paribhasha) used in Bhaishajya Kalpana.
2. Classical and Contemporary concepts of Collection, storage, Savirya Avadhi and preservation methods of different fresh and dry Aushadhi dravyas and their grahya agraahyatva
3. Detailed knowledge of routes of drug administration, Aushadha matra, Anupana, Sahapana, Aushadha Sevana Kala, Kala Avadhi, Pathya, Apathya (Posology).
4. Detailed knowledge of manufacturing, standardization, quality control, pharmacopeial standards, storage, shelf life and development of innovative technology with Standard manufacturing Operating Procedures of following dosage forms
  - i) Panchavidha Kashaya, Churna, Rasakriya, Ghana, Avaleha, Pramathya, Mantha, Panaka, Sarkara, Kshirapaka, Ushnodaka, Aushadha Siddha Udaka, Sadangodaka, Tandulodaka, Laksharasa, Arka, Satva, Kshara, Lavana, Masi, Gutika, Vatika, Modaka, Guggulu and Varti etc.
  - ii) Sneha Kalpana: Concept of accha sneha and sneha pravicharana and Murchhana. Sneha paka, types of sneha paka and sneha siddhi lakshana, Avartana. Sneha kalpa karmukata (Pharmacokinetics and dynamics of sneha kalpa). Role of Sneha in relation to absorption of drug.
  - iii) Kritanna and Bhesaja Siddha Anna Kalpana, Aharopayogi varga, concept of medicinal and functional food, dietary supplements and nutraceuticals etc.
  - iv) Sandhana kalpana: Madya varga and Shukta varga. Asava yoni. Alcoholic and acidic fermentation. Sandhana kalpa karmukata (Pharmacokinetics and dynamics). Advancements in fermentation technology. Knowledge of regulations in relation to alcoholic drug preparations.
  - v) Bahya Prayogarthi Kalpana : Lepa, Upanaha, Udvartan, Avachurnana / Avadhulana, Abhyanga, Dhupana, Malahara.
  - vi) Mukha, Karna, Nasa, Netropachararthi Kalpana:
  - vii) Basti Kalpana: Basti Yantra Nirmana, Types of basti. Anuvasana and Asthapana basti. Karma, kala and yoga basti etc. Basti Kalpa (Madhutailika, Piccha basti etc.), Comparison of Asthapana and Anuvasana basti with evacuation and retention enema.

**PART B**

All the following procedures are to be studied in relevance to Ayurvedic Bhaishajya Kalpas.

1. Methods of Expression and Extraction: Maceration, percolation, distillation, infusion and decoction.
2. **Liquids:** Clarified liquid, syrup, elixir, filtration techniques
3. **Solid dosage Forms: Powders:** Size reduction, separation techniques, particle size determination, principles of mixing. **Tablets:** Methods of tableting, suppositories, pessaries and capsules, sustained release dosage forms.
4. **Semisolid dosage forms,** emulsions, suspensions, creams and ointments, sterilization of ophthalmic preparations.
5. An introduction to various cosmetic preparations.

6. Drying, open and closed air drying, freeze drying, vacuum drying and other drying methods pharmaceutical excipients.
7. Study of classical texts with special emphasis on Chakradatta, Sharangadhara Samhita, Bhaishajya Ratnavali, Bhava Prakasha, Yogaratnakara, relevant portions of Brihatrayi, Ayurvedic Pharmacopeia of India, Ayurvedic Formulary of India.

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**PAPER - III**

**Rasa Chikitsa & Aushadha Yoga Vigyana  
PART A**

**100 Marks**

1. Rasachikitsa, Kshetrikaran, Rasajirna, Lohajirna, Aushadhi Sevana Vikarashanti Upaya. Ashuddha, Apakva, Avidhi Rasadravya Sevanajanya Vikara evam Vikara shanti upaya.
2. Detailed knowledge of Aushadhi patha Nischiti and sanyojan (formulation composition), dose, anupana and method of administration, therapeutic efficacy and uses (indications and contra-indications), probable mode of action etc. of the following Aushadhi yogas

**i. Kharaliya Rasa :** Shwasa kuthara Rasa, Tribhuvana kirti Rasa, Higuleshwara Rasa, Ananda bhairava Rasa, Maha Lakshmililasa Rasa, Vasnata kusumakara Rasa, Vasanta malti Rasa, Brihat vata chintamani Rasa, Laghu suta shekhar Rasa, Suta shekhara Rasa, Ram ban Rasa, Chandra kala Rasa, Yogendra Rasa, Hridyarnava rasa, Grahani kapata Rasa, Garbha pala Rasa, Jalodarari Rasa, Mrityunjaya Rasa, Madhumalini vasanta Rasa, Arsha kuthara Rasa, Krimi mudgara Rasa, Suchika bharana Rasa, Tri netra Rasa, Smruti sagara Rasa, Vata gajankusha Rasa, Agni kumar Rasa, Ekangavir Rasa, Kama dugha Rasa, Purna chandrodaya Rasa, Pratap lankeshwara Rasa, Maha vata vidhwansaka Rasa, Kasturi bhairava Rasa, Ashwa kanchuki Rasa, Gulma kuthara Rasa, Maha jwarankusha Rasa, Chandra mrita Rasa, Kapha ketu Rasa, Prabhakara Vati, Pravala Panchamrita, Gandhaka Rasayana, Chaturbhuj rasa, Navajivan rasa, Shonitargal rasa, Raktapitta kulakandan rasa, Amavatari Rasa, Kravyada Rasa, Garbha chintamani Rasa, Chintamani Rasa, Trilokya chintamani Rasa, Pradarantaka Rasa, Vangeshwara Rasa, Brihat vangeshwara Rasa, Shwasakasa Chintamani Rasa, Arogya vardhini Vati, Chandra prabha Vati, Agni tundi vati, Shankha Vati.

**ii. Kupipakva Rasa:** Rasa Sindura, Makaradhwaja, Sidha makaradhwaja, Samira pannaga Swarnavanga, Malla sindura, Rasa karpura, Rasa pushpa, Manikya Rasa.

**iii. Parpati Rasa :** Rasa Parpati, Loha Parpati, Tamra Parpati, Suwarna Parpati, Gagana Parpati, Vijay Parpati, Panchamrit Parpati, Shwet Parpati, Bola Parpati

**iv. Pottali Rasa:** Rasagarbha pottali, Hemagarbha pottali, Mallagarbha pottali, Hiranyagarbha pottali, Shankagarbha pottali, Lokanatha rasa, Mriganka Pottali

**v. Loha evam Mandura Kalpa:** Ayaskriti, Loha Rasayana, Amla pittantaka loha, Chandanadi loha, Dhatri loha, Navayasa loha, Putapakva vishama jwarantaka loha, Shilajatwadi loha, Tapyadi loha, Saptamrita loha, Dhatri loha Amritasara Loha, Shankaramat loha, Pradarantaka loha, Rohitaka loha. Punarnava Mandura, Shatavari Mandura, Tara Mandura, Triphala Mandura, Mandura Vataka etc.

#### **PART B**

Detailed knowledge of Aushadhi patha Nischiti and sanyojan (formulation composition), dose, anupana and method of administration, therapeutic efficacy and uses (indications and contra-indications), probable mode of action etc. of the following Aushadhi yogas

**i. Panchavidha Kashayas and their Upakalpa:** Ardraka swarasa, Tulasi swarasa, Vasa putapaka swarasa, Nimba kalka, Rasona kalka, Kulattha Kwatha, Punarnavasthaka kwatha, Rasna saptaka kwatha, Dhanyak hima, Sarivadi hima, Panchakola phanta, Tandulodaka, Mustadi pramathya, Kharjuradi mantha, Shadanga paniya, Laksha rasa, Arjuna kshirapaka, Rasona kshirapaka, Chinchapa naka, Candana panaka, Banapsha sharkara, Nimbu sharkara, Amrita satva, Ardraka satva, Ajamoda arka, Yavanyadi arka

**ii. Kritanna and Bhesaja Siddha Ahara Kalpana:** Yavagu, (Krita and Akrita), Ashtaguna manda, Laja manda, Peya, Vilepi, Krishara, Yusha, Mudga yusha, Kulattha yusha, Saptamushtika yusha, Khada, Kambalika, Raga, Shadava, Mamsarasa, Veshavara, Dadhi, Katvar Dadhi, Dadhi Mastu, Takra, Gholi, Udasvita, Mathita, Chhacchika etc.

**iii. Churna:** Sitopaladi Churna, Talisadi Churna, Triphala Churna, Hingvashtaka Churna, Avipattikara Churna, Swadishta Virechana Churna, Bhaskar Lavana Churna, Sudarshana Churna, Maha Sudarshana Churna, Gandharva Haritaki Churna, Pushyanuga Churna, Ajamodadi Churna, Hingvadi Churna, Eladi Churna, Dadimashtaka Churna, Trikatu Churna, Vaishwanara Churna, Gangadhara Churna, Jati phaladi Churna, Narayana Churna etc.

**iv. Gutika:** Arogya vardhani vati, Chandra prabha vati, Chitrakadi Gutika, Sanjivani Vati, Lasunadi vati, Lavangadi Vati, Vyoshadi vati, Khadiradi Vati, Kankayana Vati, Abhayadi modaka, Marichyadi gutika, Amalakyadi gutika, Samshamini Vati, Kutaja Ghana vati, Amarasundari Vati, Shiva Gutika, Eladi Vati, Kasturyadi Gutika, Arshoghni Vati.

**v. Guggulu:** Yogaraja Guggulu, Maha yogaraja Guggulu, Trayodashanga Guggulu, Kanchanara Guggulu, Rasnadi Guggulu, Triphala Guggulu, Simhanada Guggulu, Gokshuradi Guggulu, Kaishora Guggulu, Panchatikta Guggulu, Amritadi Guggulu, Vatari Guggulu, Lakshadi Guggulu, Abha Guggulu, Navaka Guggulu, Nava Karshika Guggulu.

**vi. Sneha Kalpa**

**Sneha Moorchhana** - Ghrita Murchana, Taila Murchhana

**Siddha Ghrita** - Shatavari Ghrita, Jatyadi Ghrita, Phala Ghrita, Dadimadi Ghrita, Kshirashatpala Ghrita, Mahatriphala Ghrita, Dhanvantari Ghrita, Amritaprasha Ghrita, Kalyanaka Ghrita, Brahmi Ghrita, Changeri Ghrita, Panchatikta Ghrita, Sukumara Ghrita, Panchagavya Ghrita

**Siddha Taila** - Maha Narayana Taila, Maha Masha Taila, Bala Taila, Nirgundi Taila, Shadbindu Taila, Vishagarbha Taila, Sahacharadi Taila, Jatyadi Taila, Apamarga Kshara Taila, Tuvarka Taila, Kshirabala Taila (Avartita), Lakshadi Taila, Anu Taila, Kumkumadi Taila, Hingutriguna Taila, Kottumchukadi Taila, Prasariyadi Taila, Dhanwantari Taila, Balashwagandhadi Taila, Balaguduchyadi Taila, Nilibhringyadi Taila, Brihadavadi Taila, Irimedadi Taila, Chandanadi Taila, Panchaguna taila, Arka taila, Pinda Taila, Kasisadya Taila

**vii. Rasakriya, Avaleha, Khanda etc.:** Darvi Rasakriya, Vasa Avaleha, Brahma rasayana, Chyavanprasha Avaleha, Kushmanda Avaleha, Dadima Avaleha, Bilvadi Avaleha, Kantakaryavaleha, Haridra Khanda, Narikela khanda, Saubhagya shunthi paka, Amrita Bhallataka, Kamsa Haritaki, Chitraka Haritaki, Vyaghri Haritaki, Bahushala Guda, Kalyana Guda

**viii. Sandhana Kalpa:** Lodhrasava, Kumaryasava, Ushirasava, Chandanasava, Kanakasava, Sarivadyasava, Pippalyasava, Lohasava, Vasakasava, Kutajarishta, Draksharishta, Raktamitrarka, Dashamularishta, Abhayarishta, Amritarishta, Ashokarishta, Sarasvatarishta, Arjunarishta, Khadirarishta, Ashwagandha Arishta, Vidangarishta, Takrarishta, Mahadrakshasava, Mritasanjivani sura, Maireya, Varuni, Sidhu, Kanji, Dhanyamla, Madhu Shukta, Pindasava.

**ix. Anya Kalpa :** Phala varti, Chandrodaya varti, Arka lavana, Narikela lavana, Triphala masi, Apamarga kshara, Snuhi kshara, Ksharasutra, Atasi upanaha, Sarjarasa malahara, Gandhaka malahara, Sindhuradi Malahara, Shatadhouta Ghrita, Sahasra Dhouta Ghrita, Siktha taila, Dashanga lepa, Doshaghna lepa, Bhallataka taila patana, Jyotishmati Taila, Bakuchi Taila, Dashanga dhupa, Arshoghna dhupa, Nishadi Netra bindu, Madhutailika Basti, Piccha Basti, Yapana Basti.

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**PAPER – IV**

**Pharmacology and Pharmacy Management**

**100 Marks**

**PART A**

**1. General Pharmacology:**

- a)** Principles of Pharmacology, Pharmacodynamics & Pharmacokinetics: Absorption, distribution, Metabolism & excretion, mechanism of action, dose determination and dose response, structure activity relationship.
- b)** Routes of drug administration
- c)** Factors modifying drug effect, Bioavailability and Bioequivalence, drug interactions, adverse drug reaction and drug toxicity
- d)** Preclinical evaluation: experimental pharmacology [bioassay, in vitro, in vivo, cell line studies] animal ethics.

**2. Clinical pharmacology:** Evaluation of New Chemical Entity – phases and methods of clinical research. Ethics involved in human research.

**3. Elemental constituents of human body and its physiological importance. Deficiencies and excess of various elements (micro-nutrients).**

**4. Toxicity of heavy metals and chelation therapy.**

**5. Knowledge of toxicity and pharmacological activities of herbo-mineral compounds.**

**6. Detailed Knowledge of Pharmacovigilance – National and International Scenario. Pharmacovigilance of Ayurvedic Drugs**

**PART B**

**1. Scope and evolution of pharmacy. Information resources in pharmacy and pharmaceutical Science.**

**2. Pharmaceutical dosage form design (Pre-formulation)**

**3. Packaging materials and Labeling**

**4. Management of pharmacy, store and inventory management, personnel management, Good Manufacturing Practices related to Ayurvedic drug industry.**

**5. Pharmaceutical Marketing, product release and withdrawals.**

**6. Hospital, Dispensing and Community pharmacy.**

**7. Patenting and Intellectual Property Rights.**

**8. Laws Governing Ayurvedic drugs**

- i. Relevant regulatory provisions of Ayurvedic drugs in Drug and Cosmetics Act - 1940 and Rules - 1945
  - ii. Laws pertaining to Drugs and Magic remedies (Objectionable Advertisement) Act – 1954.
  - iii. Prevention of Food Adulteration (PFA) act.
  - iv. Food Standards and Safety Act - 2006
  - v. Laws pertaining to Narcotics
  - vi. Factory and Pharmacy Acts
  - vii. Consumer Protection Act -1986
9. Regulatory Affairs related to International Trade and Practices of Ayurvedic Drugs
  10. Introduction to Ayurvedic Pharmacopoeia of India, Ayurvedic Formulary of India.
  11. Introduction to Indian Pharmacopoeia, British and United States Pharmacopoeia, Pharmacopoeial Codex
  12. Introduction to Traditional Knowledge Digital Library

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#### **Practicals:-**

Minimum 150 Practicals are to be performed covering all the dosage forms.  
 Educational Visits to minimum Five (5) GMP approved Ayurvedic Pharmacies.  
 Ten days posting in R & D / Production unit in GMP certified Ayurvedic Pharmacy.  
 Minimum attendance in three National Conferences within three academic years.  
 Minimum 10 clinical cases using different dosage forms are to be studied and recorded for efficacy and ADRs (if any).  
 Minimum one research paper on the core contributory work of dissertation published or accepted in peer reviewed, indexed journal.  
 Examinee has to submit supporting documents in relation to above mentioned academic activities at the time of Practical examination.

<b>Pattern of Practical Examination</b>	<b>Total Marks : 100</b>
<b>Duration of the practical:</b> 2 days	
<b>1. Identification of the specimen:</b>	10 Marks
<b>2. Drug Processing</b>	30 Marks
	(10+10+5+5)
i) Major Practicals: 2 (1 Rasashastra and 1 Bhaishajya Kalpana)	
ii) Minor Practicals: 2 (1 Rasashastra and 1 Bhaishajya Kalpana)	
<b>3. Drug testing and Analysis</b>	10 Marks (5+5)
i) Rasaushadhi – 1	
ii) Kashthaushadhi – 1	
<b>4. Power Point Presentation</b> on dissertation work: 15 Minutes	10 Marks
<b>5. A Demo Lecture</b> on any subject topic: 10 Minutes.	10 Marks
<b>6. Documentation</b>	15 Marks
i. Journals (Practical Records) of minimum 75 practicals (25 each from Rasa Shastra, Bhaishajya Kalpana and Analytical part).	
ii. Reports of the Visits	
iii. Case Records	
<b>7. Viva Voce examination</b>	15 Marks
<b>Total</b>	<b>100 marks</b>

## REFERENCE BOOKS:

1. Rasahridaya Tantra
2. Rasarnava
3. Rasaratna Samuccahaya
4. Ayurved Prakasha
5. Rasendrachudamani
6. Rasendra Chintamani
7. Rasatarangini
8. Rasapraksha Sudhakar
9. Rasamrita
10. Rasa Chandanshu - CCRAS Publication
11. Sharangadhara Samhita
12. Sharangadhara Darpan - BP Pandey
13. Bhavaprakasha
14. Yoga Ratnakara
15. Bhaishajya Ratnavali
16. Siddha Bhaishajya Manimala
17. Ayurvediya Aushadhikarana - Puranik and Dhamanakar
18. Bharat Bhaishajya Ratnakara
19. Rasayoga Sagara
20. Siddha Bhaishajya Manimala
21. Siddha Yoga Sangraha - Yadavaji Trikamji Acharya
22. Sahasrayoga
23. Vaidyaka Paribhasha Pradeepa
24. Dravyaguna Vijnan Part - 1 and 2 - Yadavji Trikamji
25. Chakradatta - Ratnaprabha,
26. Relevant Parts from Charaka Samhita, Sushruta Samhita, Kashyapa Samhita, Ashtanga Sangraha, Ashtanga Hridaya,
27. Remington: Science and Practice of Pharmacy
28. Theory and Practice of Industrial Pharmacy – Leon Lachman *et al*
29. Clinical Pharmacology - KD Tripathi
30. Clinical Pharmacology - Lawrence Benette
31. Drug Discovery and Evaluation (Pharmacological assays) - HG Vogel
32. Pharmacological Basis of therapeutics - Goodman and Gilman
33. Data Base of Medicinal Plants of CCRAS
34. Quality and Standards of Medicinal Plants – ICMR publication
35. Quality Control of Ayurvedic Drugs - PLIM, Gaziabad
36. Ayurvedic Pharmacopeia of India
37. Ayurvedic Formulary of India
38. Indian Pharmacopeia
39. British Pharmacopeia
40. United States Pharmacopeia
41. Pharmacopeia Codex
42. Current Good Manufacturing Practices
43. Drugs and Cosmetic Act 1940 and Rules 1945 with latest amendments
44. Drugs and Magic remedies (Objectionable advertisement) Act-1954
45. Prevention of Food Adulteration (PFA) act
46. Laws pertaining to Narcotics
47. Factory and Pharmacy Acts
48. Consumer Protection Act -1986
49. Brief information on the peer reviewed journals, official websites and other official search engines along with their links (related with the subject)
50. Rutleys Elements of Mineralogy
51. Bhasma Vigyaniam
52. Kupipakva Vigyaniam
53. Anupana Manjari

### **Additional Book for Reference**

1. Rasasastra

: Publication Division, Govt. Ayurveda  
College, Trivandrum

#### **2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

#### **2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

#### **2.13 Records**

Relevant records are to be maintained

#### **2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.

2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.

3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.

4. For approving the title a scrutiny Committee shall be constituted by the University.

5. The University should display the approved synopsis of dissertation on their website.

6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.

7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.

9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.

10. The dissertation shall consist critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.

11. The dissertation shall consist of not less than forty thousand words.

12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.

13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.

14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.

15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.

16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.

17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.

18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

**2.20 Journals**

**Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546

10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamya@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

#### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435

14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in/Open Access Peer Reviewed E-Journal*. Kerala University of Health Sciences, Thrissur.

#### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

### **3. EXAMINATIONS**

#### **3.1 Eligibility to appear for examinations [including Supplementary]**

##### **A. Preliminary examination:**

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

##### **B. Final examination:**

For appearing final year examination 80 % attendance in each theory and practical subjects in 2<sup>nd</sup> & 3<sup>rd</sup> years separately is required

#### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

#### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

##### **Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

##### **Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

## **SCHEDULE OF EXAMINATIONS**

- a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.
- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

## **CONDUCT OF EXAMINATION**

1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.
3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

## **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.  
The pattern is long essay for 20 marks -one question  
Short essay 10 marks - Eight questions  
Total 9 questions for 100 marks

### **3.4 Papers in each year**

Given under clause No.2.10

### **3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

### **3.6 Model question paper for each subject with question paper pattern**

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Rasashastra and Bhaishajya Kalpana)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Write the concept and relevance of the classification of Rasaushadha (Raw drugs and finished products)

**Short Essays**

**(8x10=80)**

2. Write in detail about apakwadhatubhasmasevanadosha
3. Discuss the significance of aushadhasevanakala and prayogamarga
4. Critically evaluate the role of Sharngadharasamhita in the development of Bhaishajyakalpana
5. Write the principle of chromatographic techniques , compare various chromatographic techniques and write its significance in Ayurvedic drug standardization
6. What are the scientific steps involved in the development of a new proprietary Ayurvedic medicine
7. Write various methods of gutikanirmana with suitable examples , write quality control parameters for gutika
8. Write down the salient features of GMP
9. Explain the significance of Paribhasha in Rasashastra and Bhaishajyakalpana

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Rasashastra and Bhaishajya Kalpana)**  
**(..... scheme)**

**Paper I – Rasashastra**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Write down the geochemical/Mineralogical/biological identification and grahya lakshanas of Maharasa, uparasa & Sadharana rasa dravyas

**Short Essays**

**(8x10 = 80)**

2. Write the concept of Parada Murchana. Differentiate the methods of Murchana with illustrations.
3. Write the concept of Raseswara Darshana, explain the chronological evolution of Rasashastra
4. Write in detail regarding various Yantras used for shodhana of Rasadravyas
5. Write the SOP of Processing, Standardization and quality control of Abhraka bhasma
6. Explain Trividha loha paka , give two examples of Lauha kalpa
7. Discuss the concept and relevance of Amruteekarana. Write various methods of Amruteekarana for any one drug
8. Write a critical review on Anandakanda
9. Discuss the current methods of incineration and standardization of different Putas

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Rasashastra and Bhaishajya Kalpana)  
(..... scheme)**

**Paper II – Bhaishajya kalpana**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Write the classical and contemporary methods of collection, storage and preservation of fresh and dry aushadhi dravyas and write down the steps to improve the saveeryta avadhi of Ayurvedic medicines

**Short Essays**

**(8x10 = 80)**

2. Write down the considerations in Aushadha matra and pathya apathyas during Aushadha seva
3. Discuss the development of innovative technologies in the manufacture and standardization of Kwatha
4. What is Quality assurance? Discuss various steps involved in the quality assurance of Ayurvedic products
5. Write in detail about sandhana kalpana, discuss the application of fermentation technology in Asava Arishta Nirmana
6. Discuss various methods of expression and extraction used in the preparation of Ayurvedic dosage forms
7. Write in detail ,various precautions and measures to be taken while preparing sneha
8. Write the size reduction and size separation techniques used in Ayurvedic pharmaceutical industry by mentioning relevant instrumentation
9. Discuss the unique role of Bhavaprakasha in the advancement of Rasashastra and Bhaishajya Kalpana

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Rasashastra and Bhaishajya Kalpana)  
(..... scheme)**

**Paper III – Rasachikitsa and Aushadha Yoga Vigyana**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Discuss in detail various precautions and measures to be taken while preparing and prescribing Rasaushadi, for preventing potential complications

**Short Essays**

**(8x10 = 80)**

2. Write the formulation design, composition and method of preparation of Vasantakusumakara Rasa
3. Write the method of preparation, dose , various anupanas and related indications of Rasasindura
4. Discuss various methods of Pottali nirmana, write the method of preparation and indication of Lokanatha rasa.
5. Compare various therapeutic applications of Lauha and Mandura kalpa taking suitable examples
6. Write down the ingredients and indications of Sudarshanachurna , discuss the probable mode of action in various conditions
7. Write the method of preparation of Kaisora guggulu with its dose and various anupanas related to different indications
8. Discuss the peculiarity in the preparation of Anutaila ,Write its therapeutic utility in Swasta and Athura
9. List out any three formulations that can be prescribed in Amavata , Substantiate your answer by discussing the probable mode of action of the drugs

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Rasashastra and BhaishajyaKalpana)**  
**(..... scheme)**

**Paper IV – Pharmacology and Pharmacy Management**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain in detail the factors responsible for absorption , distribution and excretion of drugs, how do these factors affect the determination of dose

**Short Essays**

**(8x10 = 80)**

2. Write down the phases and methods for the evaluation of a new chemical entity
3. Discuss the conditions occurring in deficiency and excess of iron, copper and zinc in human body
4. What are the probable complications of improperly prepared and prescribed herbominerals containing Lead and mercury, discuss about its management.
5. Discuss about an effective program for the prevention of ADR of ASU drugs
6. Explain in detail the characteristics of an ideal packaging material, suggest different packaging materials for Ayurvedic drugs
7. Explain in detail about the considerations in dosage form design.
8. Write the general guide lines for setting an Ayurvedic manufacturing unit
9. What are the different aspects of patenting and IPR, what is the relevance of IPR in protecting traditional knowledge?

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

### **3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

### **4. INTERNSHIP**

Not applicable

### **5. ANNEXURES**

#### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised

University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study

7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman

8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.
12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

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## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Vachaspati – Swasthavritta  
(M.D. (Ayurveda) - Social and Preventive  
Medicine)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Vachaspati – Swasthavritta (M.D. (Ayurveda) – Social and Preventive Medicine)

### 2.2 Objectives:

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

## 2.9 Teaching learning methods

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## 2.10 Content of each subject in each year

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**

**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
- 5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.  
Dravya-, Guna-, Karma-Parikshana Paddhati  
Aushadhi-yog Parikshana Paddhati  
Swastha, Atura Pariksha Paddhati  
Dashvidha Parikshya Bhava  
Tadvidya sambhasha, vadmarga and tantrayukti
- 6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**
- 7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

  - a. Panchamahabhuta and tridosha.
  - b. Concepts of rasa, guna, virya, vipak, prabhav and karma
  - c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.
- 8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.  
Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.
- 9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.  
Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.  
Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
- 10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**
- 11. Introduction to latest Trends in Drug Discovery and Drug Development**
  - Brief information on the traditional drug discovery process
  - Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
  - Brief introduction to the process of Drug development.
- 12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies

Randomized Controlled Trials (RCT) & their types

Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies –

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
National Pharmacovigilance Programme for ASU drugs.
14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

1. Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
2. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
3. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
4. Measures of Central tendency – Mean, Median and Mode.
5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
6. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
7. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
8. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete

**9. Measures of Central tendency – Mean, Median and Mode.**

**10. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation**

**11. Non parametric methods: Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)**

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.  
Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:**  
Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography: computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics**

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

**PRACTICAL**

**100 Marks**

**Teaching hours – 120**

**I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and

	toxicology
5	<p>Biochemistry (Clinical)</p> <p>Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry.</p> <p>Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques.</p> <p>Interpretation of the results obtained in the light of the data on normal values.</p>
6	<p>Clinical Pathology</p> <p>Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab.</p> <p>Auto cell counter, urine analyzer, ESR, microscopic examination of urine.</p>
7	<p>Imaging Sciences</p> <p>Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.</p>
8	Clinical protocol development

## II. MEDICAL STATISTICS

**Practical hours - 20**

**Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.**

**Records to be prepared.**

**Distribution of marks (Practical):**

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

1. Aushotosh Kar "Pharmacognos & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
4. Kokate, CK., Purohit, AP, Gokhale, SB (2010). Pharmacognosy. Nirali Prakashan. Pune.
5. Kokate, CK., Khandelwal and Gokhale, SB (1996). Practical Pharmacognosy. Nirali Prakashan. Pune.

6. Trease G E and Evans W C, Pharmacognosy, Bailliere Tindall, Eastbourne, U K.
7. Tyler V C., Brady, L R., and Robers J E., Pharmacognosy, Lea and Febiger, Philadelphia.
8. Tyler VE Jr and Schwarting AE., Experimental Pharmacognosy, Burgess Pub. Co, Minneapolis, Minnesota.
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11. Wallis T E., Text Book of Pharmacognosy, J & A Churchill Limited, London.
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13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
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13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
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### **Biochemistry and Laboratory techniques:**

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6. Harold Varley. Practical Clinical Bio-chemistry
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9. Clinical Biochemistry -Sabitri Sanyal, Clinical Pathology, B.I.Churchill Livingstone (P) Ltd, New Delhi.2000.
10. Satyanarayanan,U. Essentials of Biochemistry, Books and allied(P) Ltd.2002
12. Zubay, G.L. Biochemistry, W.M.C. Brown Publishers, New York 1998.
13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

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2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
3. Altick and Fenstermaker. (2007). *The Art of Literary Research*. 4th ed. W. W. Norton. Castle, Gregory. *Blackwell Guide to Literary Theory*. Blackwells,
4. Bowling, A. (2002). Research Methods in Health (2nd ed). Buckingham: Open University Press.
5. Day R.A. How to write a scientific paper. Cambridge University Press.
6. Cooray P.G. Guide to scientific and technical writing.
7. Deepika Chawla and Neena Sondhi. (2011). Research Methods- Concepts and cases. New Delhi: Vikas Publishing House.
8. Greenhalgh, T. (2006) How to Read a Paper: The Basics of Evidence-Based Medicine. (3rd ed) Blackwell
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11. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
12. Relevant portions of Ayurvedic Samhitas and other texts

### **Drug research and development:**

1. RICK NG, (2009). DRUGS-from discovery to approval. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
3. Jagdeesh, Sreekant Murthy, Gupta, YK and Amitabh Prakash Eds. Biomedical Research (From Ideation to Publication) (2010). Wolters Kluwer/ Lippincott Williams and Wilkins.
4. WHO Guidelines on Safety Monitoring of herbal medicines in pharmacovigilance systems. (2004). WHO- Geneva. ISBN 92 4 1592214.
5. Natural products isolation. (2006) 2nd ed. / edited by Satyajit D. Sarker, Zahid Latif, Alexander I. Gray. (Methods in biotechnology; 20). Includes bibliographical references and index. Humana Press Inc. ISBN 1-58829-447-1 (acid-free paper) – ISBN 1-59259-955-9 (eISBN)
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12. Jaju B.P.: Pharmacological Practical Exercise Book, *Jaypee Brothers, New Delhi.*
13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
14. Ravindran R.: X-Pharm (Software), Indian Journal of Pharmacology, *JIPMER, Pondicherry.*

### **Biotechnology and Bio-informatics:**

1. Angela M. Meireles A (2009). Extracting Bioactive compounds for food products. Theory and applications. CRC- Press Taylor and Francis Group.
2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978- 81-8318-831-9
4. Lesk, A.M. Introduction to Bioinformatics Oxford 2002.

5. Satyanarayana, U.: Biotechnology, Books and Allied (P) Ltd, Kolkata, 2005
6. Setubal J. C and J. Meidanis, Introduction to Computational Molecular Biology, PWS Publishing Company, 1997.
7. <http://www.iitb.ac.in/~crnts>.
8. <http://www.zygogen.com>.
9. <http://www.dsir.nic.in/reports/tifp/database/metallo.pdf>.
10. [www.consort-statement.org](http://www.consort-statement.org)
11. [www.strobe-statement.org](http://www.strobe-statement.org)
12. [www.icmr.nic.in](http://www.icmr.nic.in)

### **Clinical Evaluation:**

1. CDSCO, Good Clinical Practices For Clinical Research in India, Schedule Y (Amended Version – 2005), <http://cdsco.nic.in/html/GCP1.html>
2. Ethical Guidelines for Biomedical Research on Human subjects. (2000). Indian Council of Medical Research- New Delhi.
3. Gallo P., Chuang-Stein C., Dragalin V., Gaydos B., Krams M., Pinheiro J. Adaptive Designs in Clinical Drug Development—An Executive Summary of the PhRMA Working Group. *Journal of Biopharmaceutical Statistics*. 16: 275–283; 2006
4. Good Clinical Practices- (2001). Guidelines for Clinical Trial on Pharmaceutical Products in India. Central Drugs Standard Control Organization. Directorate General of Health Services. New Delhi. (<http://WWW.cdsco.nic.in.ich.org>)
5. Gupta, SK Ed. Basic Principles of Clinical Research and Methodology (2007). Jaypee Brothers- new Delhi
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9. William C. Scheffer Introduction to Clinical Researchs

### **Medical Statistics:**

1. Armitage, P. and Berry, G. (1994) Statistical Methods in Medical Research (3rd ed). Blackwell Science.
2. Armitage P, Berry G, Matthews JNS: *Statistical Methods in Medical Research*. Fourth edition. Oxford, Blackwell Science Ltd; 2002
3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
4. Bradford Hill – Basic Medical Statistics
5. Cambell, M.J. and Machin, D. (1993) Medical Statistics: A Common Sense Approach (2nd ed). Chester: Wiley.
6. Dwivedi S. N., Sundaram K. R and V. Sreenivas (2009). Medical Statistics -

- Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
7. Gupta S.P. - Fundamentals of statistics, Sultan Chand. Delhi.
  8. Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India
  9. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
  10. Mehdi, B and Prakash A. (2010). Biostatistics in Pharmacology. Practical Manual in experimental and clinical pharmacology. 1st Edition. New-Delhi: Jaypee brothers Medical Publishers
  11. Rao, NSN and Murthy, NS. (2008) 2nd Edition. Applied statistics in health sciences. Jaypee Brothers Medical Publishers (P) Ltd. Bengaluru, New Delhi.
  12. Rick J Turner and Todd A Durham (2008). Introduction to Statistics in Pharmaceutical Clinical trails. Published by the Pharmaceutical Press- An imprint of RPS Publishing, 1 Lambeth High Street, London SE1 7JN, UK
  13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
  14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
  15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana - A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.D.-AYURVEDA PRELIMINARY**

#### **SWASTHAVRITTA**

**(Preventive, Social Medicine and Yoga)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

**PART A**

**50 Marks**

1. Contribution of Swasthavritta in Community Medicine ( Public Health).
2. Comparison of Concept of Swastha according to various Ayurvedic Samhitas.
3. Applied aspect of Swasthya, based on various parameters described in Samhitas.
4. Details of definition and dimensions of health and parameters for its evaluation as per World Health Organization.
5. Relevance of Dinacharya, Ratricharya and Ritucharya in health promotion and prevention of diseases in modern day scenario and different occupations. (Importance of Niyat Kala Vihara-Dincharya, Ratricharya and Ritucharya in prevention of diseases. )
6. Applied aspect of Adharaniya and Dharaniya Vega in health promotion and prevention of diseases with examples. (Importance of Aniyat Kala-Vegdharana, Vega Udirana, Shodhana, Brumhana, Bhutadyasparshana. )

7. Details of Ahara and Poshana as per Samhitas and its role in changing diet patterns of present era.
8. Nidra as per Ayurvedic classics. Effects of changing patterns of sleep on health.
9. Concept of Brahmacharya, Abrahmacharya and its relevance in present era.
10. Concept of Bala and Ojas in relation with Vyadhikshamatva .
11. Importance and relevance of Ritu Shodhana.
12. Role of Rasayana in promotion of health and prevention of diseases. Scope of Rasayana in Geriatrics and Reproductive & Child Health.
13. The concept of Ashtanga Yoga and its relation to health.
14. References about Yoga in Ayurvedic classics.
15. References about Ayurveda in Yoga classics.
16. The phenomenon of disease manifestation based on Adhi and Vyadhi as per Yoga Vashishtha and its relevance with Therapeutic Yoga.
17. Applied aspect of Pancha Mahabhutas in Nature Cure.

### **PART B**

**50 Marks**

1. Janapadoddhwamsa and measures of its prevention.
2. Principles of Epidemiology and its application.
3. Concept of disease control and stages of intervention.
4. Role of Swasthavritta and Yoga in prevention of communicable diseases.
5. Role of Swasthavritta and Yoga in prevention of non-communicable diseases.
6. Levels of disease prevention.
7. Kriya Kala and its importance in disease prevention.
8. Basic principles of Sankramaka Vikara - causes, modes of disease transmission, epidemiological triad.
9. Principles of Health Education and its role in community health maintenance and promotion.
10. Environmental health - concept of water, soil and air purification as per Ayurveda and Modern Science.
11. Newer threats to Environment – including plastic, e-waste, radiation and global warming.
12. Importance and relevance of Meteorology in Swasthavritta.
13. Role of Swasthavritta in Maternal and Child Health care.
14. Role of Swasthavritta and Yoga in Sports' Medicine.
15. National Population Policy, Importance of Family Planning Methods in National development. Ayurvedic methods of birth control (Yoga Ratnakara).
16. National Health Policy as per Alma Ata declaration.

### **PRACTICAL**

**100 Marks**

1. Departmental duties
  - a. Duty in OPD and IPD with regard to Ayurveda Dinacharya, Ritucharya, Pathyapathya, Yoga and Nisargopachara.
  - b. Museum development- wall magazine / charts
  - c. Regular attendance in Yoga training in the Swasthya Rakshana and Yoga OPD.
2. Practice the following daily regimens

- a. Pratimarsha Nasya
- b. Anjana
- c. Kavala and Gandusha
- d. Abhyanga
- e. Udvartana
- f. Prayogika Dhoomapana
- g. Matra Basti

3. Preparation of different Krittanna Kalpanas

- a. Laja Manda
- b. Mudga, Kulatha, Chanaka Yusha
- c. Shali and Nartaki Peya
- d. Shali, Dashamoola Yavagu
- e. Shali Vilepi
- f. Krishara
- g. Nimbu Panaka
- h. Payasa
- i. Godhuma/Yava/Nartaki Roti

4. Health Awareness lectures to the community (mimimum 5)

5. Assessment of Swasthya (Miminum 5 cases)

6. Participation in observance of National & International days related to health.

7. Practice of the following Asanas:

**Yogic Shukshma and Sthula Vyayama.**

**Standing Postures-** Ardhakatichakrasana, Padahasthasana, Ardachakrasana, Trikonasana

**Sitting Postures-** Swastikasana, Siddhasana, Padmasana, Vajrasana, Bhadrasana, Gomukhasana, Shashankasana / Shashakasana, Ushtrasana, Paschimottanasana, Suptavajrasana, Ardhamatsyendrasana

**Supine Postures-** Shavasana, Pavanmuktasana, Sarvangasana, Matsyasana, Halsana, Chakrasana

**Prone Postures-** Makarasana, Shalabhasana, Bhujangasana, Dhanurasana.

8. Practice of Pranayama.

9. Uccharit Pranava Pranayama (Om Chanting with Pranayama).

**Distribution of Marks:**

1. Records	- 10 Marks
2. Preparation of Kritanna Kalpanas	- 20 Marks
3. Dinacharya procedure	- 10 Marks
4. Spotting (10) Aahar dravyas, Family Planning Devices, Vaccine/Serum and Models /Specimens, Naturopathic and yogic Specimens.	- 20 Marks
5. Yogasana and Pranayam	- 10 Marks
6. Viva-voce	- 30 Marks
<b>Total</b>	<b>- 100 Marks</b>

### **Reference Books:-**

- 1) Relevant portions of Charak, Sushruta, Vagbhata (Ashtang Hrudaya), Ashtang Samgraha, Sarangadhara, Bhavaprakasha, Madhavanidana & Yogaratnakara, Bhela Samhita with the respective commentaries
- 2) SwasthavrittaSamuchaya - Vaidya Pt Rajesvar Dutta Shastri
- 3) SwasthyaVignyana - Dr.B.G.Ghanekarshastri
- 4) SwasthvrittaVigyan - Dr.Ramharsha Singh.
- 5) Swasthvrittam - Dr.Bramhanand Tripathi
- 6) AyurvediyaSwasthvrittam - Vd.Jalukar
- 7) SwasthaVigyan - Dr.Mukundswaroop Verma
- 8) Swasthavritta - Dr.Shivkumar Gaud
- 9) Swasthavritta- Part-I & II - Vd. Mhaskar, Vd. Vatve
- 10) Ayurvediya Hitopadesh - Vd. Ranjit Rai Desai
- 11) Preventive and Social Medicine - J.K.Park
- 12) Preventive and Social Medicine - Mahajan
- 13) Preventive and Social Medicine - B.N.Ghosh
- 14) Community Medicine - Baride and Kulkarni
- 15) Preventive and Social Medicine - Gupta
- 16) Patanjali Yoga Sutra - Maharshi Patanjali, Karambelkar
- 17) HathayogPradipika - Swatmaram Yogendra
- 18) GherandSamhita - Gherand Muni
- 19) Shiva samhita - Kaivalyadhama
- 20) Yoga and Ayurveda - Dr.Rajkumar Jain
- 21) YogikYogPadhati - Bharatiyaprakrutik Chikitsa Padhat
- 22) YogikChikitsa - ShriKedarnath Gupta
- 23) SachitraYogasanDarshika - Dr.Indramohan Jha
- 24) Yoga and Yogikchikitsa - Ramharsha Singh
- 25) The Foundation of Contemporary Yoga - R.H.Singh
- 26) Yogadeepika - Shri. B.K.S. Iyengar
- 27) YogasidhantaevumSadhna - H.S.Datar
- 28) PrakritikaChikitsa - Kedarnath Gupta
- 29) PrakrutikChikitsaVigyan - Verma
- 30) PrakrutikChikitsaVidhi - Sharan Prasad
- 31) Light on Yoga, Light on Pranayama- Shri. B.K.S. Iyengar
- 32) Light on Patanjali yogasutra - Shri. B.K.S. Iyengar
- 33) Janasankhyashikshasidhanta evamUpadeysa - S.C.Seel
- 34) Health and Familywelfare - T.L.Devraj
- 35) Bio-Statistics - B.K. Mahajan
- 36) Swasthavritta - Vd.Sakad
- 37) Reddy's Comprehensive Guide to Swasthavritta – Dr.P. Sudhakar Reddy
- 38) Swasthavritta - Vd Yeshwant Patil and Vd. Vhawal
- 39) Swasthavritta - Vd. Patrikar Vijay
- 40) Dr.Me Kay Khau? - Dr.M.S. Kulkarni
- 41) Swasthavrittavidnyan - Dr.MangalaGowri
- 42) Positive Health - Dr.L.P.Gupta
- 43) Biogenic Secrete of Food In Ayurveda - Dr.L.P.Gupta
- 44) Text book of Swasthavritta - Dr. Ranade, Dr. Bobade, Dr. Deshpande

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|-----------------------------------|-------------------|
| 45) Food and nutrition            | - Swaminathan     |
| 46) Yoga and Nisargopachar        | - Vd. Prama Joshi |
| 47) Essence of Yoga               | - Dr.MangalaGowri |
| 48) The essentials of Nature Cure | - Dr.MangalaGowri |
| 49) Yogasudha                     | - Dr. Kashinath   |

**Additional Books for Reference**

- 1). Ayurvedic perspective of Communicable diseases - Dr KV Dileepkumar
- 2). Ergonomics in Ayurveda - Dr MC Sobhana

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**M.D.- AYURVEDA FINAL YEAR**

**SWASTHAVRITTA**

**(Preventive, Social Medicine and Yoga)**

**PAPER - I**

**Vaiyaktika Swasthavrittam Sadvrittam Cha  
(Personal and Moral Hygiene)**

**100 Marks**

1. Role of Swasthavritta in socio cultural, developmental and environmental aspects of health.
2. Study of indicators of health—mortality indicators, morbidity indicators, disability rates and nutritional status indicators.
3. Dinacharya – Detailed accounts by Charaka, Sushruta, Vagbhata and Bhavamishra.
4. Practical application of Dinacharya in today's era and probable physiological effect of these procedures.
5. Ratricharya – Bhavamishra and other classics.
6. Study of Day and night pattern in various countries and its relevances to the status of health.
7. Ritucharya – Classical description by Charaka, Sushruta, Vagbhata, Bhela Samhita and Bhavamishra.
8. Preventive & Promotive aspects of Ritucharya and its need and importance in present Era, Importance of Ritusandhi and Yamadamshttra.
9. Ritu Shodhana technique with reference to various Ritus, its method and mode of action in disease prevention.
10. Relevance of Vegadharana and Udirana in disease manifestation and Management.
11. Ahara – Classical food items described in Charaka, Sushruta, Vagbhata, Yogaratnakara and Sharngadhara.
12. Aharavargas and their comparison with today's food items.
13. Dietetics intervention in malnutrition, under nutrition and over nutrition as per Ayurveda and modern science.
14. Rules of Dietetics according to Charaka, Sushruta and Vagbhata.
15. Pros and Cons of vegetarian and non vegetarian foods.
16. Viruddhahara – Classical and modern day examples and its impact on health.
17. Knowledge about Assessment of nutritional status of individual and community.

18. Pathya Apathya in various diseases as per Ayurvedic classics viz. Jwara, Pandu, Raktapitta, Gulma, Prameha, Hridroga, Shosha, Unmada, Apasmara, Kamala, Udara, Shwasa, Kasa, Hikka, Agnimandya, Ajirna, Atisara, Grahani, Amlapitta, Pravahika, Arsha, Kushtha, Mutrakrichchra, Ashmari, Vidradhi, Shotha, Visarpa, Vatavyadhi, Vatarakta, Shiro-Karna-Nasa- Mukha- Netra Roga.
19. Ayurvediya Ahara, Aushadha Kalpana in relation with nutraceuticals and nutrigenomics (Prakruti Anurup Ahara).
20. Food adulteration, methods for detecting, controlling food adulteration and its legislative control.
21. Role of Nidra, Brahmacharya, Abrahmacharya in maintenance of health and causation of diseases and their management.
22. Sadvritta – Description of Charaka, Sushruta and Vagbhata. Clinical importance of Achar Rasayana, Nitya Rasayana and Sadvritta in prevention of diseases & promotion of health
23. Rasayana -- its utility in health and disease condition.
24. Scope of Vajikarana in health. – Pathya Apathya Kalpana and Vihara for Vajikarana.
25. Role of Ayurveda in mental health.
26. Vyadhihikshamatva – Ayurvedic, Modern concepts and its practical implementation.
27. Concept of genomics in relation with status of health.

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## **PAPER – II**

### **Samajika Swasthavrittam (Community Health)**

**100 Marks**

1. Ayurvedic aspect of social health.
2. Vyadhi Sankarya as a causative factor of a Vyadhi. Web of causation of diseases, multifactorial causation.
3. Natural history of diseases. ICD- International Classification of Diseases.
4. Ecology and community health. Impact of bio-geo-chemical cycle (impact of changing global nitrogen cycle on human health)
5. Environment and community health (Bhumi, Jala, Vayu their Shuddhikarana and Prakasha, Shabda, Vikirana)
6. Disinfection practices for the community – Ayurvedic and Modern .
7. Immunization programmes. Possible contribution of Ayurveda. E.g. Suvarnaprashana, Karnapalibhedana etc.
8. Housing Standards. Description of Aaturalaya(hospital), Sutikagara, Kumaragara, Panchakarmagara and Mahanasa (Kitchen)
9. Disposal of Wastes- refuse, sewage. Methods of excreta disposal in sewered and unsewered areas. Disposal of dead body.
10. Management of biomedical waste. Biomedical waste act- 1998, 2016.
11. Occupational Health. Role of Ayurveda in Occupational health, in ESI and other Government sectors.
12. Medical Entomology– Arthropods of medical importance and their control measures.
13. Medical parasitology and control in relation to communicable diseases.
14. School Health Services and possible contribution of Ayurveda.
15. Demography and Family Planning. Recent developments in family planning measures and contribution of Ayurveda.
16. Family Welfare Programme and the role of Ayurveda in it.

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1. History and evolution of Yoga
2. Nirukti and definitions of yoga
3. Rajayoga – (Ashtanga yoga) philosophy of Patanjali according to Yogasutras.
4. Hathayoga - according to Hatha Pradipika, Gheranda Samhita and Shiva Samhita.
5. Karmayoga – Philosophy according to Bhagavad Gita
6. Mantrayoga, Layayoga, Jnanayoga and Bhaktiyoga.
7. Concept of Sthula, Sukshma and Karana Shariras

8. Concept of Panchakoshas
9. Concept of Shat Chakras, Nadis and Kundalini. Signs of Nadishuddhi.
10. Physiological effect of Yoga on Body and mind – ancient and modern concepts.
11. Suryanamaskara and its effect on health.
12. Shat Kriyas and its physiological their therapeutic effects.
13. Therapeutic effect of Yogic practice in the following diseases - Diabetes, Hypertension, Cardiovascular disorders, Obesity, Asthma, Irritable Bowel Syndrome, Eczema, Psoriasis, Stress Disorders, Eye disorders, Headache, Juvenile Delinquency, Mental Retardation, Depression, Neurosis, Sexual Dysfunction, Gynecological, Uterine Disorders, Cancer, Addiction.
14. Utility of Yoga in Rehabilitation and the usage of props..
15. Yoga in Ayurveda –Concept of Moksha, Tools for Moksha, Naishthiki chikitsa, TattvaSmriti, Satyabudhhi, YoginamBalamAishwaram, Mukta Atmalaxana (Charaka Samhita Sharirasthana chapter 1 & 5)
16. History of Nisargopachara.
17. Basic Principles of Indian School of Nature Cure – Panchabhuta Upasana and its therapeutic effects and utility.
18. Basic Principles of Western School of Nature Cure.
19. Different types of Mud therapy, Hydro therapy, Helio therapy and Chromo therapy Massage and excise therapy, fasting and relaxation therapy and their therapeutic effects and utility.

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### **SCHEME OF PRACTICALS**

**DURATION: - 02 YEARS**

1. Health promotive and protective practices of Dinacharya procedures viz. Dantadhavana, Anjana, Nasya, Kavala, Gandusha, Dhumapana, Abhyanga, Udvartana

### **2) Practical Demonstration of Yoga**

#### **a) Sukshma and Sthula Vyayama**

#### **b) Suryanamaskara**

#### **c) Aasanas:**

##### **Sitting Position**

1. Padmasana
2. Swastikasana
3. Siddhasana
4. Bhadrasana
5. Gomukhasana
6. Vajrasana
7. Suptavajrasana
8. Simhasana
9. Paschimottanasana
10. Ardhamasytendrasana
11. Ushtrasana

##### **Supine position:**

1. Shavasana

2. Uttananpadasana
3. Sarvangasana
4. Halasana
5. Karnapidanasana
6. Naukasana
7. Matsyasana
8. Setubandhasana
9. Prone position:
10. Makarasana
11. Niralmbasana
12. Shalabhasana
13. Bhujangasana
14. Dhanurasana
15. Mayurasana

**Standing position:**

1. Tadasana
2. Utkatasana
3. Vrikshasana
4. Ardhakaticcharasana
5. Trikonasana
6. natarajasana

**d) Mudra**

- 1) Viparita karani
- 2) Yoga Mudra
- 3) Shanmukhi Mudra
- 4) Brahma Mudra
- 5) Ashwini mudra

**e) Bandha**

- 1) Jalandhara, Uddiyana, Mula Bandha

**f) Shuddhikriya** – Jala Neti, Sutra Neti, Jala Dhauti, Trataka, Shankhaprakshalana, Kapalabhati- Vyutkrama and Shitkrama Kapalabhati, Nauli.

**g) Pranayama** Nadishudhi- Anulom Vilom Pranayama,

**h) Kumbhaka Bhedas**

- 1) Suryabhedana
- 2) Ujjayi,
- 3) Bhastrika,
- 4) Bhramari
- 5) Sheetali
- 6) Sitkari

**i) Dhyana**

**3) Practical Demonstration of Naturopathy procedures**

- a. Mruttika Snana (Mud Bath)
- b. Mruttika Patti (Mud Pack)
- c. Pada and Hasta Snana (Foot and Arm bath)
- d. Bashpasnana (Steam bath)
- e. Avagahana (Immersion bath)

- f. Prishthasana (Spinal bath)
- g. Katisana (Hip bath)
- h. Alternate hot and cold bath
- i. Water packs
- j. Different massage techniques
- k. Sun Bath techniques
- l. Relaxation techniques – QRT (Quick Relaxation Technique), IRT (Instant Relaxation Technique), DRT (Deep Relaxation Technique).

#### **4) Long case sheets for Pathya, Apathya, Yoga and Nisargopachara advice to**

- a) Non communicable diseases 10  
**(Proforma attached as Annexure 'A' / 'E')**
- b) Communicable diseases 10  
**(Proforma attached as Annexure 'B')**
- c) Garbhini Paricharya 10  
**(Proforma attached as Annexure 'C')**
- d) Mal Nutrition treatment cases 10  
**(Proforma attached as Annexure 'D')**

#### **5) Departmental Practicals**

- 1) Danta dhavana
- 2) Anjana
- 3) Nasya
- 4) Gandusha
- 5) Kavala
- 6) Dhoompana – Dhumavarti Nirmana

#### **6) Educational Visits-**

The brief report of each visit (Minimum 10 compulsory) should be written by student in a journal (Duly signed by Guide and HOD)

- 1) Water Purification Centre
- 2) Milk Dairy
- 3) Industry
- 4) Leprosy Centre
- 5) T.B. Centre
- 6) Yoga Centre
- 7) Naturopathy Centre
- 8) Primary Health Center
- 9) Disposal of Waste Unit
- 10) Sewage Disposal Unit
- 11) Psychiatric Hospital
- 12) Isolation Hospital
- 13) A.R.T. Centre
- 14) Food and Drug Administration Centre
- 15) District /Civil Hospital

#### **7) Field Work**

- a) Community Health Survey (Minimum 10 forms) – (Proforma attached as Annexure 'F')
- b) School Health Check-up (Minimum 10 forms)

**8. Departmental duties: Regular Attendance as-**

1. Duty in OPD and IPD
2. Museum Development
3. Yoga training for Self, Swastha and patients.
4. Departmental Seminars
5. Research Journal /Article Reviews( Minimum 2)
6. Submit minimum 2 papers in any publications.
7. Micro Teaching (Training to take Lectures and Practicals of UG). Minimum 10.
8. Health Awareness talk for public.
9. Daily diary- Log book

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**Annexure 'A'**

**PROFORMA (Non - Communicable Disease case) A] General Information:**

1. Name of the Patient: \_\_\_\_\_
2. Age : \_\_\_\_\_yrs. 3. Sex : Male/Female 4.Religion : \_\_\_\_\_
5. Date of Admission : \_\_\_\_\_
- 6.Address : \_\_\_\_\_
7. Occupation : \_\_\_\_\_ 8. Education : \_\_\_\_\_
9. Per Capita income : \_\_\_\_\_Rupees.
10. Socio economic class (Modified \_\_\_\_\_)

**B] Present illness:** Chief complaints (chronological order) :

**C] History of past illness :**

1. Similar complaints in past : \_\_\_\_\_
2. Any other significant history : \_\_\_\_\_

**D] History of illness in Family :**

1. Type : \_\_\_\_\_
2. Composition : \_\_\_\_\_
3. Similar illness in family : Yes /No If yes, give details : \_\_\_\_\_

**E] Life Style and personal history :**

1. Occupation : Manual Work /Table Work/ Field Work/ Administration /Any other (Specify)
2. Muscular exertion (occupational / domestic etc.) Minimum / Moderate /Heavy
3. Exercise: Nil / Walking / Running / Jogging/ Cycling / Swimming / Weight Lifting/ Anyother specify \_\_\_\_\_
4. Mental Stress &Strain : Occupational/ domestic/ any other specify \_\_\_\_\_
5. Hobby , Recreation : \_\_\_\_\_
6. Diet :
  - a. Veg / Non Veg / Mixed
  - b. Total calorie intake \_\_\_\_\_calorie /day adequate / inadequate/ excess
  - c. Fat : adequate / inadequate/ excess Vegetable / Animal fats Predominantly saturated / unsaturated

- d. Spice & Hot foods (Specify)  
 e. Regularity in taking meals  
 f. Type of diet : balanced / Non balanced (Give reason)  
 7. Sleep and rest : adequate / inadequate  
 8. Habits & addictions

Smoking : Yes / No /Past Smoker

If yes : Type /duration /quantity/ frequency. \_\_\_\_\_

Alcohol : Yes / No /Past Alcoholic

If yes : Type /duration /quantity/ frequency. \_\_\_\_\_

Any Other : Specify, give details. \_\_\_\_\_

**F] General Examinations :** \_\_\_\_\_

**G] Systemic Examination :** \_\_\_\_\_

RS/ CVS/CNS/PA : \_\_\_\_\_

**H] Diagnosis :**

i. Provisional : \_\_\_\_\_

ii. Differential : \_\_\_\_\_

**I] Investigations :** Investigation done : \_\_\_\_\_

Any further investigations required : \_\_\_\_\_

**J] Final Diagnosis :** \_\_\_\_\_

**K] Management :** \_\_\_\_\_

Drug therapy (give details) : \_\_\_\_\_

Diet modification : \_\_\_\_\_

Health Education / Life Style modification : \_\_\_\_\_

Follow up : \_\_\_\_\_

**L] Prevention & Control Measures**

Primary Prevention : \_\_\_\_\_

Secondary Prevention : \_\_\_\_\_

Tertiary Prevention : \_\_\_\_\_

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### Annexure 'B'

#### PROFORMA (Communicable Disease case) A] General Information:

1. Name of the Patient : \_\_\_\_\_
2. Age : \_\_\_\_\_ yrs. 3. Sex : Male / Female
4. Date of Examination : \_\_\_\_\_
- 5.Address : : \_\_\_\_\_
6. Locality : Urban – Slum / Non-Slum /Rural/Other (Specify) \_\_\_\_\_
- 7 Duration of Stay in the Locality ; \_\_\_\_\_ (years/months)
8. Hospital Registration No. : \_\_\_\_\_
9. Date of Admission : \_\_\_\_\_

10. Religion / Caste : \_\_\_\_\_  
11. Education : \_\_\_\_\_  
12. Occupation : \_\_\_\_\_  
13. Type of Family : \_\_\_\_\_  
14. Total No. of Family Members : \_\_\_\_\_  
15. Total Family income: \_\_\_\_\_  
16. Per Capita income per month : \_\_\_\_\_ Rs.  
17. Socio-economic Status (As per \_\_\_\_\_ classification) : \_\_\_\_\_

**B] Chief Complaints (In Chronological order)**

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. \_\_\_\_\_

**C] H/O Present illness : \_\_\_\_\_**

**D] H/O Past illness : \_\_\_\_\_**

- i. Similar complaints in past : \_\_\_\_\_  
ii. Any other significant history : \_\_\_\_\_

**E] History of illness in the family : \_\_\_\_\_**

**F] Personal History**

- a. Dietary : \_\_\_\_\_  
b. Immunization : \_\_\_\_\_  
c. Habits : \_\_\_\_\_

**G] Environmental history (Pertinent to the route of transmission)**

- i] Water Supply  
ii] Excreta Disposal  
iii] Drainage  
iv] Cattle  
v] Pet animals, Poultry  
vi] Housing condition  
vii] Over Crowding  
iii] insect nuisance  
ix] Courtyard of house etc.

**H] Epidemiological information (Backward tracing of index case.)**

- i. Any similar case in the family / neighborhood / School / Place of recreation / any other Specify. \_\_\_\_\_  
ii. History of attending to similar case – if yes, when ? \_\_\_\_\_  
iii. History of visiting any unaccustomed place if yes, When ? \_\_\_\_\_  
iv. Total contacts \_\_\_\_\_  
v. High risk contacts. \_\_\_\_\_

**I] Provisional Diagnosis (with justification in brief) \_\_\_\_\_**

**J] Differential Diagnosis : \_\_\_\_\_**

1. \_\_\_\_\_  
2. \_\_\_\_\_  
3. \_\_\_\_\_  
4. \_\_\_\_\_  
5. \_\_\_\_\_

**K] Investigation Done : \_\_\_\_\_**

- a. If yes, reports & your comments. \_\_\_\_\_  
b. Other investigations required (with reason) if any. \_\_\_\_\_

**L] Final Diagnosis :** \_\_\_\_\_

**M] Management of Patients :**

- 1 Chemotherapy / Other drugs (Specify with name, dose schedule, route of administration, duration of treatments and precautions if any) \_\_\_\_\_
2. Diet modification \_\_\_\_\_
3. Personal Hygiene \_\_\_\_\_
4. Health Education \_\_\_\_\_
5. Any other (Specify) \_\_\_\_\_
6. Follow up : \_\_\_\_\_

**N] Preventive & Control Measures at**

a. Family Level

- i. Chemoprophylaxis \_\_\_\_\_
- ii. Immunization (Active / Passive) \_\_\_\_\_
- iii. Personal Hygiene (specify) \_\_\_\_\_
- iv. Chemical disinfections of (Specify) \_\_\_\_\_  
concentration, quantity, technique, contact period, way of disposal of disinfected material
- v. Follow up \_\_\_\_\_

vi. Care of Contacts \_\_\_\_\_

b. Community Level

- i. General Intervention measures \_\_\_\_\_
  - ii. Specific measures against the illness \_\_\_\_\_
  - iii. Any other (Specify) \_\_\_\_\_
- c. National Level \_\_\_\_\_

National Health Programme for control / Eradication of the disease or related health programmes.

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**Annexure 'C'**  
**PROFORMA (Ante-natal case)**

**A] General Information :**

- 1) Date of Examination : \_\_\_\_\_
- 2) Name : \_\_\_\_\_
- 3) Age : \_\_\_\_\_ yrs.
- 4) ANC Registered : Yes/No If yes, place/date/month of registration \_\_\_\_\_
- 5) Education of pt \_\_\_\_\_ Occupation of pt \_\_\_\_\_
- 6) Education of Husband \_\_\_\_\_ Occupation of Husband \_\_\_\_\_
- 7) No of family members \_\_\_\_\_ Total family income \_\_\_\_\_ Rs/month
- 8) Socio-economic class \_\_\_\_\_ (as per Modified \_\_\_\_\_ classification)
- 9) Address : \_\_\_\_\_

**B] Complaints – if any:** \_\_\_\_\_

**C] Menstrual History :** Menarche, cycles-day/month, regularity, flow etc.

L. M. P. \_\_\_\_\_ E.D.D. \_\_\_\_\_

**D] Obstetric History :**

**Gestational**

Age (wks)

Type of Delivery

Hosp./ Home

Conducted By

Baby alive/stillborn/ abortion

Live birth interval

Use of contraceptives (specify)

1.

2.

**E] Family History :** \_\_\_\_\_

**F] Past History :** Hypertension/ Diabetes/ S.T.D./T.B./Leprosy etc.

**G] Personal History :** Bowel/Bladder/Sleep/Appetite/Habits/Addictions etc.

Immunization status : Tetanus toxoid / Any other ( specify)

a) For current pregnancy \_\_\_\_\_

b) For previous pregnancy \_\_\_\_\_

Nutritional status (based on Calorie Intake, other nutrients, anthropometry etc.)

**H] General Examination :**

Height \_\_\_\_\_ Cms./ Wt. \_\_\_\_\_ kgs, / TPR / B.P \_\_\_\_\_ mm of Hg .

Pallor/Icterus/ Cyanosis/Oedema/

Lymphadenopathy. any other ( specify ) .

Cleanliness of : Skin /Nails/Hair/Clothes/Eyes/Ears/Nose/Oral Cavity / breasts & Nipples etc.

**I] P/A Examination:**

Ht. of uterus/presentation and lie of foetus /Head-floating or engaged/foetal

movements/FHS/ Any other (specify) \_\_\_\_\_

**J] Systemic Examination:**

RS/CVS/CNS \_\_\_\_\_

**] Investigations: -**

Urine: Albumin/sugar/microscopic/culture. –

Hb % Blood grouping & cross matching/VDRL/HIV/Blood Sugar –

Any other ( specify ) \_\_\_\_\_

**L] Clinical impression :**

Whether high risk ? If yes, mention the risk factors. \_\_\_\_\_

**M] Advice to the Patient and Management :**

Immunization/Diet/Supplementary nutrition/personal hygiene/preparation for

motherhood/ drugs given (if any) / Warning signals/follow up visits .

Whether the patient/ family members are availing services from Anganwadi / Other

Community Health Centre /Private Health Agency? If yes – Give details.

Give details of referral in high risk cases. \_\_\_\_\_

**N] Follow up :**

Findings & Remarks (including advice) \_\_\_\_\_

During subsequent visits (mention the date of visits) \_\_\_\_\_

**O) Comments :**

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**Annexure 'D'**  
**PROFORMA MALNUTRITION CASE ( UNDER FIVE YEARS AGE )**

**A] General Information :**

- i..Date of Examination : \_\_\_\_\_
- ii.. Name of the informer & his/her relationship with the child (case) \_\_\_\_\_
1. Name of the child : \_\_\_\_\_
2. Date of birth : \_\_\_\_\_ 3.Age : \_\_\_\_\_ 4.Sex : Male/Female
5. Caste /Religion : \_\_\_\_\_
6. Address : \_\_\_\_\_
7. Whether the child is attending Balwadi/Nursery etc. : \_\_\_\_\_
8. Father \_\_\_\_\_ Mother \_\_\_\_\_
- I. Name : \_\_\_\_\_
- II. Age : \_\_\_\_\_
- III. Education : \_\_\_\_\_
- IV. Occupation : \_\_\_\_\_
- V. Income : \_\_\_\_\_
9. I Total number of family members and family composition \_\_\_\_\_
- II. Total family income \_\_\_\_\_ Rupees per month
- III. Per Capita Income \_\_\_\_\_ Rupees per month
- IV. Socio economic Status \_\_\_\_\_ as per \_\_\_\_\_ classification

**B] Complaints (if any) :** \_\_\_\_\_

**C] History of Present illness :** \_\_\_\_\_

**D] History of Past illness (if any) :** \_\_\_\_\_

**E] Family history :** \_\_\_\_\_

**F] Birth history of the case :** \_\_\_\_\_

- i. Place of delivery : Home/ Hospital /Other (Specify) \_\_\_\_\_
- ii. Delivery conducted by : Untrained or trained Dai / Nurse / Doctor etc. \_\_\_\_\_
- iii. Type of delivery : FTND/ Pre mature/SFD/Assisted delivery etc. \_\_\_\_\_
- iv. Congenital anomaly : if any give details. \_\_\_\_\_

**G] Anthropometry**

- i. Weight : \_\_\_\_\_ Kgs. ii. Height \_\_\_\_\_ Cms.
- iii. Chest Circumference \_\_\_\_\_ Cms. Iv. Head Circumference \_\_\_\_\_ Cms
- v. Mid arm Circumference \_\_\_\_\_ Cms.

**H] Immunization History**

- i. B.C.G./ OPV/ DPT/Measles/Any other give details \_\_\_\_\_
- ii. Immunization card available : Yes / No.

**I] Dietary History**

i. Breast feeding: Yes/ No

a. If yes : Only breast feed or weaning started

b. If weaned : Age at weaning, type of weaning foods etc. c. If not breast feed : At what age breast feeding stopped? (give reason if any)

ii. a. Total calorie intake \_\_\_\_\_ Calorie /day

b. Total Protein intake \_\_\_\_\_ gram/day

iii. Calorie / Protein deficient if any : Yes/No.

If yes mention percent of deficient \_\_\_\_\_

iv. Any other nutritional deficiency (Specify) \_\_\_\_\_

**J] General Examination :**

1) Built, nourishment & general appearance

2) TPR 3) Pallor 4) Icterus 5) Cyanosis 6) Lymphadenopathy

7) Oedema 8) Dehydration 9) Eyes 10) Ears

11) Face, Nose, Lips & Tongue 12) Teeth gums oral cavity 13) Skin, nails hair

14) Rachitic changes. 15) Any other (specify)

**K] Systemic Examination :RS/ CVS/PA/CNS/Gonads**

**L] Milestones of growth & development**

Physical / Psychological/ Motor / intellectual / behavioral/ Social

Milestones : Normal/ Augmented / Delayed

**M] Provisional diagnosis / Differential Diagnosis :** \_\_\_\_\_

**N] Investigations :** \_\_\_\_\_

**O] Diagnosis :** \_\_\_\_\_

**P] Management, Advise and Comments :** \_\_\_\_\_

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**Annexure 'E'**  
**PROFORMA**

*PathyaApathya, RutuShodhan, Yoga &Nisargopachar Advice to Patients of Attached Hospital.*

**A General Information :-**

1) Sr. No. : \_\_\_\_\_

2) Name of the Patient : \_\_\_\_\_

3) Address : \_\_\_\_\_

4) OPD No. : \_\_\_\_\_ IPD NO. \_\_\_\_\_

5) Diagnosis : \_\_\_\_\_

6) Date of Advice : \_\_\_\_\_

**B) Advice given****a) Pathya - Apathya**

i. Ahar : \_\_\_\_\_

ii. Vihar : \_\_\_\_\_

b) Rutu Shodhan Upakrama : \_\_\_\_\_

c) Yogopachar: \_\_\_\_\_

d) Nisargopachar: \_\_\_\_\_

C) Date of follow up : \_\_\_\_\_

\_\_\_\_\_

D) Remarks: \_\_\_\_\_

\_\_\_\_\_

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**ANNEXURE 'F'**  
**HEALTH SURVEY**

Name and address of the family head-

Telephone no.

**Family profile**

Family Structure

Age(in completed years)	Male	Female	Total
<1 yr(infants)			
1-5yrs			
6-15yrs			
16-64yrs			
>65 yrs			

Family Composition

Family type: Nuclear/Joint/Three generation

Total members:

Sr. No	Name	Age in years	Sex	Marital status	Education	Occupation	Income	Medico social status

Immunization status (if relevant)

Per capita monthly income=Total family income/no. of members

### Socioeconomic Class

### Medico Social Status

Infant Children under 5yrs Pregnancy Lactation Old age	Leprosy HIV/STD Cancer Diabetes BP/Cardiac problem	Disability Mental retardation Psychiatric problem Alcohol addition Social evils
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### Living Conditions (Housing)

Sr.No.	Housing standards	Score :1 for satisfactory criteria 0 for poor criteria
1	<b>Construction</b> :Locality, Safety ,Protection	
2	<b>Space</b> :Spatial sufficiency to prevent overcrowding	
3	<b>Light and Ventilation</b>	
4	<b>Water</b> :Adequacy ,accessibility and safe storage of water	
5	<b>Sanitation</b> : Washing, bathing, toilet facilities, sanitary disposal of kitchen waste, garbage and excreta	
6	<b>Kitchen</b> :Facilities for hygienic cooking and storage of food, smoke outlet	
7	<b>Environment Disturbances</b> : Noise, air pollution, weather Inclemency toxic fumes, dust, odour, moisture, open drain etc. <b>Vector</b> like fly, mosquito, rodent and other nuisance	
8	<b>Animals</b> : Pet, cattle, poultry keeping	
9	<b>Cleanliness</b> of persons and premises	
10	<b>Connectivity</b> :Road, transportation, communication, schools, hospital cultural, social, recreational, fire, police, etc	

Assessment of living condition: Score: 6-10 Satisfactory, 0-5 Poor

### Vital Events in the Family in last 1 year

Birth:

Adoption:

Marriage/Divorce:

Death with cause:

### Social status of the Family Education:

**Occupation: Living condition:**

**Social relationship:**

**Socioeconomic status:**

**Health Status of the Family - Good/Average/Poor**

**Which pathy family members prefer for treatment- Allopathy/Ayurvedic/Homeopathy**

**Epidemiological History for Communicable Diseases**

1 .Name of disease:

2 .Any similar case in the family: Yes/No

3. Any similar case in neighborhood: Yes/No

4. Any contact with similar case: Yes/No

**Family (Hereditary) History For Non-communicable Diseases**

**Non-communicable disease: Present/Absent If yes, specify:**

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**SIGN OF GUIDE**

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**Format of Practical / Oral Examination**

Sr. No	Heading of Practicals	Marks
1	Daily work book-Log book	10
2	Case Record Sheets	10
3	One Long Case ( Pathya-Apathya advice)	10
4	One Short Case (Yoga and naturopathy advice )	05
5	Yoga Demonstration	10
6	Microteaching/Topic presentation	05
7	Thesis Presentation	20
8	Viva Voce	30
	<b>Total</b>	<b>100</b>

**REFERENCE BOOKS:**

1) Relevant portions of Charak, Sushruta, Vagbhata (AshtangHrudaya), Ashtang Samgraha, Sarangadhara, Bhavaprakasha, Madhavanidan&Yogaratanakara, Bhela Samhita with the respective commentaries

2) SwasthavrittaSamuchaya

- Vaidya Pt Rajesvar Dutta Shastri

3) SwasthyaVignyana

- Dr. B. G. Ghanekarshastri

4) SwasthvrittaVigyan

- Dr.Ramharsha Singh.

5) Swasthvrittam

- Dr.BramhanandTripathi

6) AyurvediyaSwasthvrittam

- Vd.Jalukar

7) SwasthaVigyan

- Dr.MukundswaroopVerma

8) Swasthavritta

- Dr.Shivkumar Gaud

9) Swasthavritta- Part-I & II

- Vd. Mhaikar, Vd.Vatve

10) Ayurvediya Hitopadesh

- Vd.RanjitRai Desai

11) Preventive and Social Medicine

- J.K.Park

12) Preventive and Social Medicine

- Mahajan

13) Preventive and Social Medicine

- B.N.Ghosh

- |   |                                       |
|---|---------------------------------------|
| 14) Community Medicine                                      | - Baride and Kulkarni                 |
| 15) Preventive and Social Medicine                          | - Gupta                               |
| 16) Patanjali Yoga Sutra                                    | - Maharshi Patanjali, Karambelkar     |
| 17) HathaPradipika  | - SwatmaramYogendra                   |
| 18) GherandSamhita  | - Gherand Muni                        |
| 19) Shiva samhita   | - Kaivalyadhama                       |
| 20) Yoga and Ayurveda                                       | - Dr.Rajkumar Jain                    |
| 21) YogikYogPadhati   | - BharatiyaprakrutikChikitsaPadhat    |
| 22) YogikChikitsa   | - ShriKedarnath Gupta                 |
| 23) SachitraYogasanDarshika                                 | - Dr.IndramohanJha                    |
| 24) Yoga and Yogikchikitsa                                  | - Ramharsha Singh                     |
| 25) The Foundation of Contemporary Yoga                     | - R.H.Singh                           |
| 26) Yogadeepika   | - Shri. B.K.S. Iyengar                |
| 27) YogasidhantaevumSadhna                                  | - H.S.Datar                           |
| 28) PrakritikaChikitsa                                      | - Kedarnath Gupta                     |
| 29) PrakrutikChikitsaVigyan                                 | - Verma                               |
| 30) PrakrutikChikitsaVidhi                                  | - Sharan Prasad                       |
| 31) Light on Yoga, Light on Pranayama                       | - Shri. B.K.S. Iyengar                |
| 32) Light on Patanjala yogasutra                            | - Shri. B.K.S. Iyengar                |
| 33) Janasankhyashikshasidhanta evamUpadeysa                 | - S.C.Seel                            |
| 34) Health and Familywelfare                                | - T.L.Devraj                          |
| 35) Bio-Statistics  | - B.K. Mahajan                        |
| 36) Swasthavritta   | - Vd.Sakad                            |
| 37) Reddy's Comprehensive Guide to Swasthavritta            | -Dr.P.Sudhakar Reddy                  |
| 38) Swasthavritta   | - Vd Yeshwant Patil and Vd. Vhawal    |
| 39) Swasthavritta   | - Vd. Patrikar Vijay                  |
| 40) Swasthavrittavidnyan                                    | - Dr.MangalaGowri                     |
| 41) Positive Health   | - Dr.L.P.Gupta                        |
| 42) Biogenic Secretes of Food In Ayurveda                   | - Dr.L.P.Gupta                        |
| 43) Text book of Swasthavritta                              | - Dr.Ranade, Dr.Bobade, Dr.Deshpande  |
| 44) Food and nutrition                                      | - Swaminathan                         |
| 45) Yoga and Nisargopachar                                  | - Vd. Prama Joshi                     |
| 46) Yogic sukshnavyayam                                     | - Swami Dheerendra Brahmachari        |
| 47) Integrated approach of Yoga therapy for Positive Health | - Dr R Nagarathna and Dr H.R.Nagendra |
| 48) Yogavasistha  |                                       |

#### **Additional Books for Reference**

- 1). Ayurvedic perspective of Communicable diseases - Dr KV Dileepkumar
- 2). Ergonomics in Ayurveda - Dr MC Sobhana

#### **2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

#### **2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

### **2.13 Records**

Relevant records are to be maintained

### **2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.
3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.
4. For approving the title a scrutiny Committee shall be constituted by the University.
5. The University should display the approved synopsis of dissertation on their website.
6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.
7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.
9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.
10. The dissertation shall consist critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.
11. The dissertation shall consist of not less than forty thousand words.
12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.
13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.
14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.

15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.

16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.

17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.

18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

**2.20 Journals**

**Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251

17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamy@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in/Open Access Peer Reviewed E-Journal*. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

### 3. EXAMINATIONS

#### 3.1 Eligibility to appear for examinations [including Supplementary]

##### A. Preliminary examination:

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

##### B. Final examination:

For appearing final year examination 80 % attendance in each theory and practical subjects in 2<sup>nd</sup> & 3<sup>rd</sup> years separately is required

#### 3.2 Schedule of Regular/Supplementary exams

The University shall conduct not more than two examinations in a year.

#### 3.3 Scheme of examination showing maximum marks and minimum marks

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

##### **Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

##### **Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

#### SCHEDULE OF EXAMINATIONS

a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.

b. The final examination shall be conducted on completion of three academic years after commencement of PG course.

c. Examination shall ordinarily be held in the month of June or July and November or December every year.

- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

### **CONDUCT OF EXAMINATION**

- 1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
- 2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.
- 3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.  
The pattern is long essay for 20 marks -one question  
Short essay 10 marks - Eight questions  
Total 9 questions for 100 marks

#### **3.4 Papers in each year**

Given under clause No.2.10

#### **3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

#### **3.6 Model question paper for each subject with question paper pattern**

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Swasthavritta)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the role of swasthavritta and yoga in the prevention of Non communicable diseases

**Short Essays**

**(8x10=80)**

2. Briefly explain the concept of bala and ojus in relation with vyadhikshamatwa.
3. Explain the applied aspects of panchamahabhutas in Nature cure.
4. Describe the role of adharaniyavegas in health promotion and disease prevention.
5. Briefly explain the features of epidemiological triad in the causation of diseases.
6. Write the modern and Ayurvedic methods of purification of water.
7. Explain the importance of family planning methods in National development
8. Briefly explain the effects of Global warming.
9. Write the National health policy as per Alma Ata declaration.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Swasthavritta)  
(..... scheme)**

**Paper I – Vaiyaktika Swasthavrittham Sadvrittam Cha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain ritucharya according to the ritus available in kerala and analyse its purpose and relevance

**Short Essays**

**(8x10 = 80)**

2. Explain the relevance and logic of dwadasaasana pravichara mentioned by susruta with different examples?
3. Explain nidra and its importance for the maintenance of health and prevention of disease
4. Discuss in detail about ahara Vargas in comparison with today's food items
5. Explain the role of ayurveda in mental health
6. Explain the indicators of health with examples
7. Discuss in detail about the pathyapathya in amlapitta and agnimandya with reasoning and prepare a therapeutic dietary protocol for the management
8. Explain food adulteration and its impact on health in the present scenario with controlling measures
9. Explain varsha ritu charya with its importance in disease prevention

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Swasthavritta)  
(..... scheme)**

**Paper II – Samajika Swasthavritham**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Discuss in detail about the impact of environmental pollution on health and its preventive measures

**Short Essays**

**(8x10 = 80)**

2. Explain Ayurvedic immunomodulatory procedures for vyadhikshamatwa and its role in disease prevention
3. Explain the role of Ayurveda for the prevention of noncommunicable diseases in the present scenario
4. Discuss in detail about the concept of family planning in Ayurveda and analyse the merits and demerits of this measures
5. Explain the web of causation of diseases and analyse it on the basis of vyadhisankara mentioned in ayurveda
6. Explain health impact of the biomedical waste and the measures for its management
7. Explain the role of Ayurveda in palliative ,rehabilitative and convalescent care
8. Explain the school health services and the role of Ayurveda in it
9. Explain any one arthropod borne infection and its controlling measures

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Swasthavritta)  
(..... scheme)**

**Paper III – Samkramaka Roga Pratishedham evam Swasthyaprashasanam**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain any one National health programme and the role of ayurveda in it

**Short Essays**

**(8x10 = 80)**

2. Explain the epidemiology of Hepatitis and its controlling measures with ayurvedic outlook
3. Explain the Ayurvedic perspective of samkramaka rogas and its preventive measures
4. Discuss in detail about the modern and ayurvedic perspective of host defence mechanism
5. Discuss in detail about the investigations has to be carried out in tuberculosis with ayurvedic perspective
6. Explain AIDS and its controlling measures and discuss the role of ayurveda in it
7. Explain mumps with ayurvedic perspective
8. Explain the application of vital statistics in ayurveda research
9. Explain the role of ayurveda in disaster management

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Swasthavritta)  
(..... scheme)**

**Paper IV – Yoga evam Nisargopachara**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the basic principles of indian school of naturecure-panchabhoota upasana and its therapeutic utility

**Short Essays**

**(8x10 = 80)**

2. Explain the concept of shad chakras on the basis of modern physiology
3. Explain the therapeutic yoga module for the management of stress disorders
4. Discuss the principles of chromotherapy and magnetotherapy
5. Discuss in detail about the mode of action of the therapeutic yoga package for the management of obesity
6. Explain the yoga siddhikara and vinashakara bhavas and analyse its role in both of it
7. Explain the pathyapathya of a yogi and describe the principle behind it
8. Explain Neti and its therapeutic importance
9. Explain suryanamaskara and its role in health preservation

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

**3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners

should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

### **4. INTERNSHIP**

Not applicable

### **5. ANNEXURES**

#### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended

for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study
7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman
8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.

12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

\*\*\*\*\*



## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Vachaspati – Kaumarabhritya –  
Bala Roga (M.D. (Ayurveda) - Pediatrics)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Vachaspati – Kaumarabhritya – Bala Roga (M.D. (Ayurveda) – Pediatrics)

### 2.2 Objectives:

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

### 2.9 Teaching learning methods

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## **2.10 Content of each subject in each year**

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**  
**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

#### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

#### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

#### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

#### **4. Scientific writing and publication skills.**

- a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
- b. Different types of referencing and bibliography.
- c. Thesis/Dissertation: contents and structure
- d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)

## **5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati

Aushadhi-yog Parikshana Paddhati

Swastha, Atura Pariksha Paddhati

Dashvidha Parikshya Bhava

Tadvidya sambhasha, vadmarga and tantrayukti

## **6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**

## **7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

- a. Panchamahabhuta and tridosha.
- b. Concepts of rasa, guna, virya, vipak, prabhav and karma
- c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.

## **8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.

## **9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).

## **10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**

## **11. Introduction to latest Trends in Drug Discovery and Drug Development**

- Brief information on the traditional drug discovery process
- Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
- Brief introduction to the process of Drug development.

## **12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies  
 Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies  
 Randomized Controlled Trials (RCT) & their types  
 Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.  
 Errors and bias in research.  
 New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)  
 Phases of Clinical studies: 0,1,2,3, and 4.  
 Survey studies –  
 Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
 National Pharmacovigilance Programme for ASU drugs.
14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
 Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

1. Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
2. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
3. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
 Types of variables – Continuous, discrete, dependent and independent variables.  
 Type of series – Simple, Continuous and Discrete
4. Measures of Central tendency – Mean, Median and Mode.
5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
6. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
7. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
8. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
 Types of variables – Continuous, discrete, dependent and independent variables.  
 Type of series – Simple, Continuous and Discrete
9. Measures of Central tendency – Mean, Median and Mode.

**10. Variability:** Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation

**11. Non parametric methods:** Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.

Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:** Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography:** computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

### **PRACTICAL**

**100 Marks**

**Teaching hours – 120**

### **I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and

	toxicology
5	Biochemistry (Clinical) Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
6	Clinical Pathology Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
7	Imaging Sciences Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
8	Clinical protocol development

## II. MEDICAL STATISTICS

Practical hours - 20

Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.

Records to be prepared.

Distribution of marks (Practical):

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

1. Aushotosh Kar "Pharmacognos & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
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#### **Pharmaceutical chemistry, quality control and drug standardization:**

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8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
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13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
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### **Biochemistry and Laboratory techniques:**

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
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13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
3. Altick and Fenstermaker. (2007). *The Art of Literary Research*. 4th ed. W. W. Norton. Castle, Gregory. *Blackwell Guide to Literary Theory*. Blackwells,
4. Bowling, A. (2002). Research Methods in Health (2nd ed). Buckingham: Open University Press.
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8. Greenhalgh, T. (2006) How to Read a Paper: The Basics of Evidence-Based Medicine. (3rd ed) Blackwell
9. Kothari - CR (2004). Research Methodology- Methods and Techniques (Second Revised Edition). New Age International Publishers- New Delhi.
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11. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
12. Relevant portions of Ayurvedic Samhitas and other texts

### **Drug research and development:**

1. RICK NG, (2009). DRUGS-from discovery to approval. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
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<http://browse.oecdbookshop.org/oecd/pdfs/free/9740801e.pdf>(latest version)
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13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
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### **Biotechnology and Bio-informatics:**

1. Angela M. Meireles A (2009). Extracting Bioactive compounds for food products. Theory and applications. CRC- Press Taylor and Francis Group.
2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978- 81-8318-831-9
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8. <http://www.zygogen.com>.
9. <http://www.dsir.nic.in/reports/tifp/database/metallo.pdf>.
10. [www.consort-statement.org](http://www.consort-statement.org)
11. [www.strobe-statement.org](http://www.strobe-statement.org)
12. [www.icmr.nic.in](http://www.icmr.nic.in)

### **Clinical Evaluation:**

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2. Ethical Guidelines for Biomedical Research on Human subjects. (2000). Indian Council of Medical Research- New Delhi.
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9. William C. Scheffer Introduction to Clinical Researchs

### **Medical Statistics:**

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  14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
  15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana - A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.D.-AYURVEDA PRELIMINARY**

#### **KAUMARBHRITYA - BALA ROGA** **(Pediatrics)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

**PART A**

**50 Marks**

1. Development of Kaumarbhritya tantra including ancient and modern literature. Strength of Ayurveda specific to child health care.
2. Vayobheda (Classification of age) according to different classics
3. Anatomical and physiological differences in child compared to adult.
4. Ayurvedic consideration of physiology and pathology of Dosha, Dhatu, Mala, Oja, Agni, Prakriti (sharirika-manasika), Kaya and Dhatuposhana in children.
5. Basic Concepts of growth and development, and its assessment.
6. Ayurvedic and modern clinical methods of examination of healthy and diseased newborn and children.
7. Knowledge of modern diagnostic tools like clinical and laboratory investigations, X-ray, USG, MRI etc.

8. Fundamentals of Ayurvedic treatment for childhood disorders.
9. Applied pharmacological considerations: Ayurvedic and modern concepts of drug doses, administration, distribution, metabolism, excretion, and other important factors of consideration.
10. National programs related to pediatrics.
11. Childhood Samskara
12. Principles of Child Psychology (Ayurvedic & modern concepts)

## **PART B**

**50 Marks**

1. Concept of Bala Rasayana and its application in physical and mental health of children.
2. Concept of Vyadhi-Kshamatva avam Vardhanopaya. Concept of immunity and immune enhancing measures including immunization.
3. Concept of Dhupana and Raksha karma and their clinical application in pediatric practice
4. Basic concepts of single drugs commonly used in pediatric practice with special reference to their karma like- Guduchi, Yastimadhu, Mandukaparni, Shankhapushpi, Ativisha, Pippali, Maricha, Shunti, Haritaki, Amalaki, Tulasi, Bhumyamalaki, Daruharidra, Haridra, Vidanga, Katuki, Dadima, Brahmi, Ashvagandha, Shatavari, Bala, Kampillaka, Trivrita, Jyotishmati, Vacha, Jeevanti, Rasna, Shatavari, Anantamula (Krishna Sariva), Durva, Khadir, Tankana, Tambula, Jatamansi, Sphatika.
5. Knowledge of their ingredients, indications, precautions and specific considerations including adverse drug reactions (ADR) of commonly used Ayurvedic formulations in pediatric practice e.g. Aravindasava, Baalachaturbhadra Churna, Kumarakalyana Rasa, Saraswatarista, Swarnaprashana (Kashyapa Samhita), Kumaryasava, Kushmanda Rasayana (Sharangdhar), Ashvagandha Rasayana (Ashtanga Hridaya), Brahmi Ghrita, Kalyanaka Ghrita, Talishadi Churna, Sitopaladi Churna, Haridra Khanda, Krimikuthara Rasa, Mugdha Rasa, Dantodbheda-Gadantaka Rasa, Rajanyadi Churna (Ashtanga Hridaya), Samvardhana Ghrita, Ashta Mangal Ghrita.
6. Methods of preparation of various specific Kalpana (e.g. Lehya, Syrup, drops etc.) according to needs of children.
7. Common instruments and their application in new born care and general pediatric practice.
8. Specific considerations in research methods related to Pediatrics.
9. Regulatory laws related to child health management

## **PRACTICAL**

**100 Marks**

### **Contents:**

1. a) In-patient case history record - (25 Patient)  
b) Child Health record - (50 Case)
2. Involvement in Outreach and National programs:
  - a. School Child health checkup
  - b. Adolescent education
  - c. Adolescent counseling etc
3. Pediatric ward/nursery management.

### Distribution of Marks:

1. a) Case History Record - (25 Patient)	- 10 Marks
b) Child Health record - (50 Case)	- 10 Marks
2. Bed side clinical case taking	
a. Long Case	- 20 Marks
b. Short Case	- 10 Marks
3. Procedures/ Kriya Kalpa	- 15 Marks
4. Identification of instruments & Spotting	- 15 Marks
5. Viva-voce	- 20 Marks
<b>Total</b>	<b>- 100 Marks</b>

### Reference Books:-

1. Kashyapa Samhita Complete Hindi translation : Satyapal Vidhyalankara  
English translation : Prof. Premvati Tiwari
2. Principles & practice of Pediatrics in Ayurveda: CHS Shastry
3. Child Health Care in Ayurveda : Abhimanyu Kumar
4. Ayurvedic Concepts of human Embryology : Abhimanyu Kumar
5. Kaumarbhritya : D.N. Mishra
6. Kaumarbhritya Ke Antargata Balgraho Ka Kramika Evam Vaigyanika Adhyana  
: Prof. Chanchal Sharma
7. Notes on Kaumarbhritya : Dr. Dinesh K S
8. Pran – Pratyagamanam : Dr. B.M. Singh
9. Ayurveda Dwara Matra Evam Shishu Paricharya : Dr. KS Patel, V.K. Kori & Rajgopal S.
10. Kaumarbhritya related references from Charaka Samhita, Sushruta Samhita  
Vagbhata etc.
11. Clinical Methods in Paediatrics : Meharban Singh
12. Pediatrics Emergencies : Meharban Singh
13. Essential Pediatrics : O.P. Ghai
14. Text Book of Pediatrics : Nelson
15. Care of New Born : Meharban Singh

### Additional Books for Reference

1. Text Book of Kaumarabhritya : Publication Division, Govt. Ayurveda College,  
Trivandrum
2. Sadhana- A complete Guide on Kasyapa Samhita : Dr. Lekshmi. M. K
3. Clinical paediatrics in Ayurveda : Dr. Dinesh. K. S
4. Manual of Ayurvedic Paediatrics : Dr. Dinesh K. S

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**M.D.- AYURVEDA FINAL YEAR**

**KAUMARBHRITYA - BALA ROGA**  
**(Pediatrics)**

**PAPER - I                      Bija, Garbha Vigyaniya (Human Genetics, Embryology)                      100 Marks**

**A. Prakrita Bija-Bijabhaga-Bijabhagavayava evam Tadjanya Vikriti (Genetics and related disorders)**

1. Ayurvedic genetics with modern interpretations: Shukra, Shonita, Shukra Shonita Doshas, Bija-Bijabhaga-Bijabhagavayava Vikriti, Matrija and Pitraja Bhavas, Yajjah Purushiya and Atulyagotriya; Measures for obtaining good progeny.

2. Modern genetics

Basic concepts:

1. Cell, cell division, nucleus, DNA, chromosomes, classification, karyotype, molecular and cytogenetics, structure of gene, and molecular Screening.
2. Human Chromosomes - Structure, number and classification, methods of chromosome preparation, banding patterns.
3. Single gene pattern inheritance: Autosomal & Sex chromosomal pattern of inheritance, Intermediate pattern and multiple alleles, Mutations, Non Mendelian inheritance, mitochondrial inheritance, Genomic imprinting, parental disomy.
4. Criteria for multi-factorial inheritance.

Pathogenesis

1. Pathogenesis of chromosomal aberrations and their effects, recombinant DNA, genetic inheritance, inborn errors of metabolism
2. Chromosomal abnormalities: Autosomal & Sex chromosomal abnormalities, syndromes
3. Multifactorial pattern of inheritance: Teratology, Cancer Genetics – Haematological malignancies, Pharmacogenetics.
4. Chromosomal disorders
5. Chromosomal aberration (Klinefelter, Turner and Down's syndrome)
6. Genetic Counseling, Ethics and Genetics.

**B. Prakrita Bija-Bijabhaga-Bijabhagavayava evam Tadjanya Vikriti (Genetics and related disorders)**

1. Garbha (embryo), Garbhawastha (gestation period), sperm, ovum; spermatogenesis; oogenesis; structure of ovum

2. Sperm in the male genital tract; sperm in the female genital tract, activation and capacitation of sperm.

3. Garbha Masanumasika Vriddhi evam Vikasa (Ayurvedic and modern concepts of Embryo and Fetal development) ☐ First week of development

- Second week of development
- Third week of development
- Fourth to eighth week of development (Embryonic period)
- Development from third month till birth (Fetal period)

4. Formation of Prakriti, their assessment in children viz. Bala, Kumara, Yauvana; Pathya-Apathya according to Prakriti.
5. Apra (Placenta) Apra Nirmana (Formation of placenta), Apra Karya (Functions of placenta); Apra Vikara (Placental abnormalities)
6. Nabhinadi (Umbilical Cord) Formation and features of umbilical cord
7. Garbha Poshana (Nutrition- from conception to birth)
8. Yamala Garbha (twins)
9. Garbha Vriddhikara Bhavas, Garbhopaghatkara Bhavas.
10. Effect of maternal medication, diet and illness over fetus.
11. Teratology including defects of bija, atma karma, kal, ashaya etc.: causative factors for teratogenecity, mode of actions of teratogenes, critical periods
12. Perinatal Care and Perinatal complications
13. Scientific study of Jataharini specific to children.
14. Prenatal diagnosis
15. Samanya Janmajata Vikara (Common congenital anomalies of different systems): Sahaja Hridaya Vikara (Congenital Cardiac Disorders) Jalashirshaka (Hydrocephalus), Khandaoushtha (cleft lip), Khanda-Talu (cleft palate), Sanniruddha Guda (Anal stricture / imperforated anus), Pada-Vikriti (Talipes equinovarus and valgus), Tracheoesophageal Fistula (TOF), Spina bifida, Meningocele, Meningomyelocele, Pyloric Stenosis.

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**PAPER – II**

**Navajata Shishu Vigyan evam Poshana**

**100 Marks**

**PART A**

1. Navajata Shishu Paribhasha, Vargikarana (Important definitions and classification related to neonates.)
2. Navajata Shishu Paricharya evam Prana-Pratyagamana (Care of the newborn including recent methodology for the resuscitation)
3. Samanya Navajata Shishu Paricharya (General Neonatal Care –Labour room onwards)
4. Samaya purva evam Samaya pashchat Jata Shishu Paricharya (Management of preterm, post term and IUGR newborn)
5. Prasava Kalina Abhighataja Vyadhi (Birth injuries): Upashirshaka (Caput , cephalohematoma), Bhagna (Fractures), Mastishkantargata Raktasrava (ICH, IVH, Subdural hemorrhage)
6. Navajata Shishu Parikshana (Examination of new born): Ayu Parikshana (including Lakshanadhyaya) Modern approach of Neonatal Examination including gestational age assessment
7. Kumaragara: Navajata Shishu Kaksha Prabandhana (Nursery management), NICU, Nursery plan, staff pattern, medical records, Visankramnikarana (sterilization), Knowledge of equipments used in nursery.

**PART B**

8. Navajata Shishu Vyadhi (Early neonatal disorders): Hypothermia, Shvasavarodha (Asphyxia Neonatorum/Respiratory distress), Ulvaka (Aspiration pneumonia), Rakta

Vishamayata (Neonatal septicemia), Kamala (Neonatal Jaundice), Akshepaka (Neonatal convulsion), Pandu (Anemia), Atisara (Diarrhea), Asamyaka Nabhinal kartanjanya vyadhi.

9. Navjata Kshudra Vikara (Minor neonatal ailments): Chhardi (Vomiting), Vibandha (constipation), Udara shul (Infantile colic), Puya Sphota (Pyoderma), Shishu Netrabhishyanda (Ophthalmia neonatorum).

10. Sadyojatasya Atayayika Chikitsa (Management of neonatal emergencies): Shock, Fluid and electrolyte imbalance, Convulsion, Hemorrhagic diseases of Newborn etc.

11. Procedures: Shiro-Pichu, Abhyanga, Parisheka, Pralepa, Garbhodaka Vamana (Stomach wash), Ashchyotana Neonatal resuscitation techniques, Blood sampling, Intravenous canulation, Umbilical vein catheterization, Bone marrow aspiration, Phototherapy, Naso-Gastric tube insertion, Urethral catheterization, Exchange blood transfusion, Thoracocentesis, Bone marrow infusion, Lumbar puncture

12. Nutrition:

A. Navjat Shishu Ahara (Neonatal feeding):

1. Specific Feeding methodology as per Ayurveda and recent advances; Day to day fluid, milk, caloric requirement for the newborn, feeding technique for the preterm baby.

2. Stanyotpatti and Prasruti (Lactation physiology), Stanya Samghatana (Composition of breast milk), Stana Sampat (Characteristics of normal breast), Stanya Sampata evam Mahatva (Properties & importance of pure milk), Stanya-Piyusha (Colostrum); Stanya-Pana-Vidhi (Method for breast milk feeding), Stanyakshaya / Stanyanasha (Inadequate production and absence of breast milk), Stanya parikshana (Examination of breast milk), Stanyabhava Pathya Vyavastha (Alternative feeding methods in absence of breast milk), Various feeding methods, TPN( Total Parenteral Nutrition)

3. Stanyadosha (Vitiation of Breast milk), Stanya Shodhana (Purification of breast ), Stanya Janana and Vardhanopakrama (Methods to enhance breast milk formation)

4. Dhatri (Wet nurse): Dhatri Guna and Dosha (Characteristics of Wet nurse), of Breast Milk Banking.

5. Lehana (Elucturies)

B Bala-Poshana (Child Nutrition):

6. Daily requirements of nutrients for infant and children

7. Common food sources

8. Satmya and Asatmya Ahara (Compatible and incompatible diet)

9. Pathya evam Apathya Ahara (Congenial and non-congenial diet)

10. Stanyapanayana (Weaning)

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**PAPER - III**

**Balrog (Pediatric Disorders)**

**100 Marks**

### **PART A**

1. Pranvaha Srotasjanya Vyadhi (Respiratory disorders)- Kasa (Cough), Shvasa (Respiratory distress Syndrome), Tamaka Shwasa (Childhood Asthma), Bronchiolitis, Shvasanaka Jwara (Pneumonia- bacterial, viral etc) Rajyakshma (tuberculosis), Vaksha-Puyata (Pyothorax), Vaksha Vata-Purnata (Pneumothorax)

2. Annavaha Srotasjanya Vyadhi (Gastrointestinal disorders): Jwar (Fever), Chhardi (Vomiting) Ajirna (Indigestion), Kshiralsaka, Atisara (Diarrhea), Pravahika, Vibandha (Constipation), Udarshula (Pain in abdomen), Guda bhramsh (Rectal prolapse)
3. Rasa evam Raktavaha Srotasjanya Vyadhi (Hematological and circulatory disorders): Pandu (Anemia and its various types like Nutritional, haemolytic etc.) and , Raktapitta (Bleeding disorders), Vishishta Hridrog (Specific cardiac diseases- RHD etc), Hypertension, Leukemia.
4. Mamsavaha Srotasjanya Vyadhi: Myopathies
5. Mutravaha srotasjanya Vyadhi (Urinary System disorders): Vrikkashotha (Glomerulonephritis and nephrotic syndrome), Mutrakriccha (Dysuria), Mutraghata (Anuria),
6. Vataavaha Sansthanjanya Vyadhi (Nervous system disorders): Apasmara (Epilepsy), Mastulunga-Kshaya, Mastishka-Shotha (Encephalitis), Mastishkavrana-Shotha (Meningitis),
7. Pediatric disabilities and Rehabilitation: Cerebral palsy, Ardita (Facial paralysis), Pakshavadha (Hemiplegia), Ekangaghata (Monoplegia), Adharanga Vayu (diplegia),. Amavata (Juvenile Rheumatoid arthritis)
8. Manovaha Srotasa Vyadhi: Breath holding spell, Shayya mutra (Bed wetting), Autism, ADHD (Attention Deficit and hyperactive disorders), Learning Disability, Mental retardation, Temper tantrum, Pica.

## PART B

9. Antahsravi evam Chayapachayajanya Rog (Endocrine and Metabolic disorders)
10. Kuposhanjanya Vyadhi (Nutritional disorders): Karshya-Phakka-Balshosha-Parigarbhika (PEM and allied disorders), Vitamin-mineral and trace elements deficiency disorders, Hypervitaminosis,
11. Krimi evam Aupsargika Rog (Infestations and Infections):Krimi (Giardiasis and intestinal helminthiasis, Amoebiasis) Common bacterial, viral infections with special reference to vaccine-preventable diseases: Rohini (Diphtheria), Whooping cough, Aptanaka (Tetanus including neonatal tetanus), Romantika (Measles), Karnamula Shotha (Mumps), Rubella and Masurika (Chickenpox), Antrika Jwar (Typhoid and Paratyphoid), Viral Hepatitis,,; Vishama Jwar (Malaria) and Kala-azar, Dengu fever, HIV (AIDS), Poliomyelitis, Mastishkavaran Shotha (Meningitis), Mastishka Shotha (Encephalitis), Chickengunia
12. Tvaka Vikara (Skin disorders): Ahiputana (Napkin Rashes), Shakuni (Impetigo), Sidhma, Pama, Vicharchika, Charmadal (Infantile atopic dermatitis), Gudakutta.
13. Anya Vyadhyi (Miscellaneous disorders): Jalodar (Ascites), Gandamala, Apachi (Cervical lymphadenitis), Kukunakadi Akshi Rog, Hodgkin & non-Hodgkin Lymphoma, Abnormal growth patterns, Short stature , Niruddha prakash (Phimosis), Paridagdha Chhavi, Utphullika
14. Samghata- Bala Pravrita Rog (damstra): Dog bite. Snake bite, Scorpion bite etc
15. Atyayika Balarog Prabandhana (Pediatric emergency management): Shock and Anaphylaxis, Fluid and electrolyte management, Drowning, Foreign body aspiration, Status epilepticus, Acute hemorrhage, Acute renal failure, Febrile convulsion, Status asthmaticus, Burn, Acute Poisoning
16. Balagraha: Scientific study of Graha Rogs
17. Life Style disorders

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1. Significant contributions of Kashyapa samhita, Arogya raksha Kalpadrum and other texts /treatises of Ayurveda such as Harita Samhita in the field of Kaumarabhritya including relevant parts from Brihatrai
2. Panchakarma: Principles of Panchakarma [Swedan–Hasta–Pata sweda etc], and their application in pediatric practice in detail.
3. Update knowledge of clinical pediatrics including recent researches in Kaumarabhritya.
4. Fundamentals of Hospital management with special emphases on Pediatric Ward.

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**Practical/ Clinical Exposure for (Record of exposures to be produced at the practical examination)**

1. Full term, preterm, post term new born baby care
2. Practical procedures like – phototherapy, premature baby care, KMC, venepuncture, cord blood sampling, stomach wash, suction, resuscitation, etc.
3. Practical skill of Pediatric Panchakarma procedures
4. Child Health Check up
5. IQ Assessment of Children
6. Exposure to National Health Programs related to Children, including Immunization Program.
7. Patient case Records (50 Records)
8. Practical knowledge of modern diagnostic (invasive & non invasive) tools and techniques used in pediatrics.
9. Management of common pediatrics emergencies.
10. Participation in UG teaching/training from UG syllabus via A-V aids (minimum-3)
11. Minimum 15 days compulsory reciprocal exposures in Kaumarabhritya department of other institution during the study period.
12. Participation in National/international seminars
13. Publication/acceptance of two research papers in indexed/peer reviewed/ISSN journals from the dissertation.

**Pattern of practical examination:**

1. Case record	-15 Marks
2. Bed side examination	
a) Short Case	-15 Marks
b) Long Case	-25 Marks
3. Identification of instruments/ spotting	-10 Marks
4. Lecture/Dissertation Presentation	-10 Marks
5. Viva-voce	-25 Marks
<b>Total</b>	<b>- 100 Marks</b>

**REFERENCE BOOKS:**

- |  |                          |
|--|--------------------------|
| 1. Kashyapa Samhita Complete Hindi translation | : Satyapal Vidhyalankara |
| English translation                            | : Prof. Premvati Tiwari  |

- |   |  |
|---|--|
| 2. Principles & practice of Pediatrics in Ayurveda  | : CHS Shastry                          |
| 3. Child Health Care in Ayurveda  | : Abhimanyu Kumar                      |
| 4. Ayurvedic Concepts of human Embryology   | : Abhimanyu Kumar                      |
| 5. Kaumarbhritya  | : Prof. D.N. Mishra                    |
| 6. Kaumarbhritya Ke Antargata Balgraho Ka Kramika Evam Vaigyanika Adhyana                 | : Prof. Chanchal Sharma                |
| 7. Notes on Kaumarbhritya   | : Dr. Dinesh K S                       |
| 8. Pran – Pratyagamanam   | : Dr. B. M. Singh                      |
| 9. Ayurveda Dwara Matra Evam Shishu Paricharya  | : Dr. KS Patel, V.K. Kori & Rajgopal S |
| 10. Kaumarbhritya related references from Charaka Samhita, Sushruta Samhita Vagbhata etc. |  |
| 11. Clinical Methods in Paediatrics   | : Meharban Singh                       |
| 12. Pediatrics Emergencies  | : Meharban Singh                       |
| 13. Essential Pediatrics  | : O.P. Ghai                            |
| 14. Text Book of Pediatrics   | : Nelson                               |
| 15. Care of New Born  | : Meharban Singh                       |

#### **Additional Books for Reference**

1. Text Book of Kaumarabhritya : Publication Division, Govt. Ayurveda College, Trivandrum
2. Sadhana- A complete Guide on Kasyapa Samhita : Dr. Lekshmi. M. K
3. Clinical paediatrics in Ayurveda : Dr. Dinesh. K. S
4. Manual of Ayurvedic Paediatrics : Dr. Dinesh K. S

#### **2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

#### **2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

#### **2.13 Records**

Relevant records are to be maintained

#### **2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.
3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.

4. For approving the title a scrutiny Committee shall be constituted by the University.
5. The University should display the approved synopsis of dissertation on their website.
6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.
7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.
9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.
10. The dissertation shall consist critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.
11. The dissertation shall consist of not less than forty thousand words.
12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.
13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.
14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.
15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.
16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.
17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.
18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

**2.20 Journals**

**Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamya@gmail.com

35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in/Open Access Peer Reviewed E-Journal*. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

## **3. EXAMINATIONS**

### **3.1 Eligibility to appear for examinations [including Supplementary]**

#### **A. Preliminary examination:**

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

#### **B. Final examination:**

For appearing final year examination 80 % attendance in each theory and practical subjects in 2<sup>nd</sup> & 3<sup>rd</sup> years separately is required

### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

#### **Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

**Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

**SCHEDULE OF EXAMINATIONS**

- a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.
- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

**CONDUCT OF EXAMINATION**

1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.
3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.

The pattern is long essay for 20 marks -one question

Short essay 10 marks - Eight questions

Total 9 questions for 100 marks

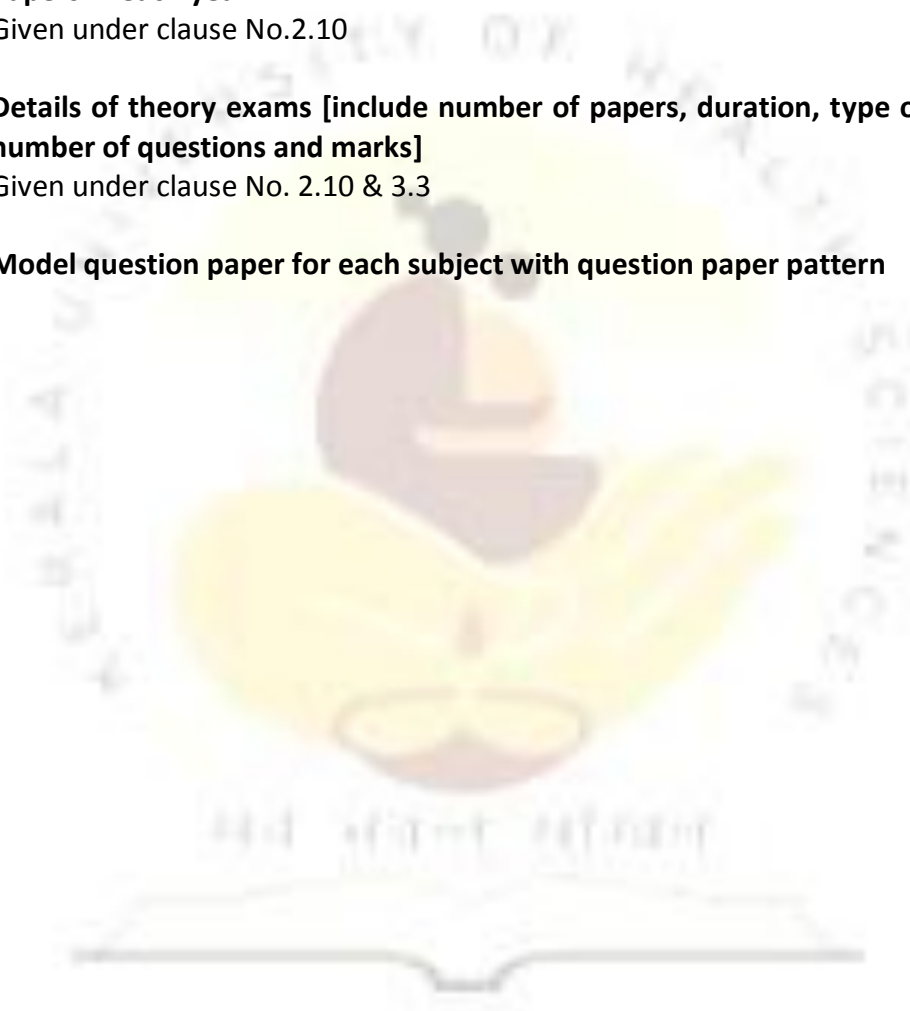
#### **3.4 Papers in each year**

Given under clause No.2.10

#### **3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

#### **3.6 Model question paper for each subject with question paper pattern**



QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Kaumarabhritya - Balaroga)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the concept of Growth & Development and its assessment.

**Short Essays**

**(8x10=80)**

2. Importance of Samskara in clinical practice.
3. Examination of a diseased New born.
4. Dhathuposhana in children.
5. Relevance of Rakshakarma.
6. Fundamental treatment principles for Childhood illness
7. Measures to improve Vyadhikshamatwa.
8. Samvardhana ghritha.
9. Utility of Guluchi, Athivisha, Yashtimadhu and Trivrith.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kaumarabhritya - Balaroga)  
(..... scheme)**

**Paper I – Bija, Garbha Vigyaniya (Human Genetics, Embryology)**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Pathogenesis of Chromosomal abnormalities.

**Short Essays**

**(8x10 = 80)**

2. Factors favouring the Intra-uterine Growth and Development.
3. Explain two Congenital anomalies.
4. Importance of Perinatal Care.
5. Placental abnormalities and fetal outcome.
6. Discuss about Jathaharini.
7. Congenital Heart Disease (Sahaja Hridrogam).
8. What are the causes for Developmental Disorders.
9. Explain garbha Vridhi Vikasa karma (Intra-uterine Growth and Development)

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kaumarabhritya - Balaroga)  
(..... scheme)**

**Paper II – Navajata Shishu Vigyan evam Poshana**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Prasavakaleena abhigataja vyadhi

**Short Essays**

**(8x10 = 80)**

2. Relevance of Ayupareeksha
3. Indications of Lehana
4. Sthanya dushti karanas and explain two Sthanyadushtijanya vikaras.
5. Sthanya sodhana chikitsa
6. Care of the New Born and its Importance.
7. Importance of Prasana in New Born.
8. Pathophysiology of Neonatal jaundice.
9. Management of a Pre-term baby.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kaumarabhritya - Balaroga)  
(..... scheme)**

**Paper III – Balrog (Pediatric Disorders)**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Principles and management of Rasa Dushti janya vikaras.

**Short Essays**

**(8x10 = 80)**

2. Discuss about Apasmara in children with its treatment Principles.
3. Differentiate Attention Deficit Hyperactivity Disorder and Autism.
4. Prevention of Aupasargika Rogas.
5. Principles and management of Kuposhanajanya vikaras.
6. Clinical features of Pandu and Krimi.
7. Phakka roga chikitsa.
8. Explain the concept of Graha.
9. Common Pediatric emergencies.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kaumarabhritya – Balaroga)  
(..... scheme)**

**Paper IV – Kaumarabhritya in Ancient Classics and recent Advances**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Importance of Vedanadhyaya of Kasyapa Samhita in clinical Diagnosis.

**Short Essays**

**(8x10 = 80)**

2. Contributions of Arogyakalpadruma to Visarpa.
3. Restrictions of Sodhana Chikitsa in Childhood.
4. Relevance of Vasthi in pediatric neurological disorders.
5. Kumaragara for effective pediatric care. Detail.
6. Modified Swedana chikitsa in children.
7. Sadya snehana as Poorvakarma.
8. Kasyapa's contributions to Pediatric Dietetics.
9. Indications for Vamana in Children.

\*\*\*\*\*

**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

**3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

### **4. INTERNSHIP**

Not applicable

### **5. ANNEXURES**

#### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department

and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

## **Guidelines for Preparation of PG Dissertation**

### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study
7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis

4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman
8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.
12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.

16. Use the term Dissertation for Masters and Thesis for Doctoral research.

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## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Vachaspati – Agada Tantra  
(M.D. (Ayurveda) - Toxicology and Forensic  
Medicine)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## **2. COURSE CONTENT**

### **2.1 Title of course and description:**

Ayurveda Vachaspati – Agada Tantra (M.D. (Ayurveda) – Toxicology and Forensic Medicine)

### **2.2 Objectives:**

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### **2.3 Medium of instruction:**

The medium of instruction of the course is English

### **2.4 Course outline**

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### **2.5 Duration**

3 years.

### **2.6 Subjects**

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### **2.7 Total number of hours**

Given under curriculum Clause No 2.10

### **2.8 Branches if any with definition**

Not applicable

## **2.9 Teaching learning methods**

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## **2.10 Content of each subject in each year**

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**

**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
- 5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati  
Aushadhi-yog Parikshana Paddhati  
Swastha, Atura Pariksha Paddhati  
Dashvidha Parikshya Bhava  
Tadvidya sambhasha, vadmarga and tantrayukti
- 6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**
- 7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

  - a. Panchamahabhuta and tridosha.
  - b. Concepts of rasa, guna, virya, vipak, prabhav and karma
  - c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.
- 8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.
- 9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
- 10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**
- 11. Introduction to latest Trends in Drug Discovery and Drug Development**
  - Brief information on the traditional drug discovery process
  - Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
  - Brief introduction to the process of Drug development.
- 12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies

Randomized Controlled Trials (RCT) & their types

Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies –

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
National Pharmacovigilance Programme for ASU drugs.
14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

1. Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
2. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
3. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
4. Measures of Central tendency – Mean, Median and Mode.
5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
6. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
7. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
8. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete

**9. Measures of Central tendency – Mean, Median and Mode.**

**10. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation**

**11. Non parametric methods: Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)**

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.  
Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:**  
Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography: computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics**

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

**PRACTICAL**

**100 Marks**

**Teaching hours – 120**

**I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and

	toxicology
<b>5</b>	Biochemistry (Clinical) Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
<b>6</b>	Clinical Pathology Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
<b>7</b>	Imaging Sciences Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
<b>8</b>	Clinical protocol development

## II. MEDICAL STATISTICS

**Practical hours - 20**

**Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.**

**Records to be prepared.**

**Distribution of marks (Practical):**

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

1. Aushotosh Kar "Pharmacognos & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
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6. Trease G E and Evans W C, Pharmacognosy, Bailliere Tindall, Eastbourne, U K.
7. Tyler V C., Brady, L R., and Robers J E., Pharmacognosy, Lea and Febiger, Philadelphia.
8. Tyler VE Jr and Schwarting AE., Experimental Pharmacognosy, Burgess Pub. Co, Minneapolis, Minnesota.
9. Wallis- TE (2011)- reprint. Practical Pharmacognosy (Fourth Edition) Pharma Med Press, Hyderabad.
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11. Wallis T E., Text Book of Pharmacognosy, J & A Churchill Limited, London.
12. WHO guidelines on good agricultural and collection practices- (GACP) for medicinal plants (2003).World Health Organization- Geneva.
13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
2. Brain, KR and Turner, TD. (1975). The Practical Evaluation Phytopharmaceuticals. Wright Scientechnica, Bristol.
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4. Harborne, JB (1973). Phytochemistry Methods. Chapman and Hall, International Edition, London.
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8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
9. Mahadik KR, Bothara K G. Principles of Chromatography by, 1st edition, Nirali Prakashan.
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11. Quality Control Methods for Medicinal Plant Material. Reprint (2002). WHO Geneva.
12. Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
15. Stahl E., Thin Layer Chromatography - A Laboratory Handbook, Springer Verlag, Berlin.

16. Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo and Dev Dutt Rakesh (2008). Extraction Technologies for Medicinal and Aromatic Plants INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste

### **Biochemistry and Laboratory techniques:**

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
3. David Frifelder. W. H. Freeman. (1982). Physical Biochemistry by; 2 edition
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6. Harold Varley. Practical Clinical Bio-chemistry
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13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
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7. Deepika Chawla and Neena Sondhi. (2011). Research Methods- Concepts and cases. New Delhi: Vikas Publishing House.
8. Greenhalgh, T. (2006) How to Read a Paper: The Basics of Evidence-Based Medicine. (3rd ed) Blackwell
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12. Relevant portions of Ayurvedic Samhitas and other texts

### **Drug research and development:**

1. RICK NG, (2009). DRUGS-from discovery to approval. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
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4. WHO Guidelines on Safety Monitoring of herbal medicines in pharmacovigilance systems. (2004). WHO- Geneva. ISBN 92 4 1592214.
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<http://browse.oecdbookshop.org/oecd/pdfs/free/9740801e.pdf>(latest version)
9. OECD Series on Principles of Good Laboratory Practice (GLP) and Compliance Monitoring, 1998.  
[http://www.oecd.org/document/63/0,2340,en\\_2649\\_34381\\_2346175\\_1\\_1\\_1,00.html](http://www.oecd.org/document/63/0,2340,en_2649_34381_2346175_1_1_1,00.html)
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12. Jaju B.P.: Pharmacological Practical Exercise Book, *Jaypee Brothers, New Delhi.*
13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
14. Ravindran R.: X-Pharm (Software), Indian Journal of Pharmacology, *JIPMER, Pondicherry.*

### **Biotechnology and Bio-informatics:**

1. Angela M. Meireles A (2009). Extracting Bioactive compounds for food products. Theory and applications. CRC- Press Taylor and Francis Group.
2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978- 81-8318-831-9
4. Lesk, A.M. Introduction to Bioinformatics Oxford 2002.

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7. <http://www.iitb.ac.in/~crnts>.
8. <http://www.zygogen.com>.
9. <http://www.dsir.nic.in/reports/tifp/database/metallo.pdf>.
10. [www.consort-statement.org](http://www.consort-statement.org)
11. [www.strobe-statement.org](http://www.strobe-statement.org)
12. [www.icmr.nic.in](http://www.icmr.nic.in)

### **Clinical Evaluation:**

1. CDSCO, Good Clinical Practices For Clinical Research in India, Schedule Y (Amended Version – 2005), <http://cdsco.nic.in/html/GCP1.html>
2. Ethical Guidelines for Biomedical Research on Human subjects. (2000). Indian Council of Medical Research- New Delhi.
3. Gallo P., Chuang-Stein C., Dragalin V., Gaydos B., Krams M., Pinheiro J. Adaptive Designs in Clinical Drug Development—An Executive Summary of the PhRMA Working Group. *Journal of Biopharmaceutical Statistics*. 16: 275–283; 2006
4. Good Clinical Practices- (2001). Guidelines for Clinical Trial on Pharmaceutical Products in India. Central Drugs Standard Control Organization. Directorate General of Health Services. New Delhi. (<http://WWW.cdsco.nic.in.ich.org>)
5. Gupta, SK Ed. Basic Principles of Clinical Research and Methodology (2007). Jaypee Brothers- new Delhi
6. ICH Harmonised Tripartite Guidelines for Good Clinical Practices.(1997)- Quintiles- Published by Brookwood Medical Publications. Richmond, Surrey. United Kingdom.
7. NCI. *Clinical Trials Education Series*. <http://www.cancer.gov/clinicaltrials/learning/clinical-trials-education-series>, 2001.
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9. William C. Scheffer Introduction to Clinical Researchs

### **Medical Statistics:**

1. Armitage, P. and Berry, G. (1994) Statistical Methods in Medical Research (3rd ed). Blackwell Science.
2. Armitage P, Berry G, Matthews JNS: *Statistical Methods in Medical Research*. Fourth edition. Oxford, Blackwell Science Ltd; 2002
3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
4. Bradford Hill – Basic Medical Statistics
5. Cambell, M.J. and Machin, D. (1993) Medical Statistics: A Common Sense Approach (2nd ed). Chester: Wiley.
6. Dwivedi S. N., Sundaram K. R and V. Sreenivas (2009). Medical Statistics -

- Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
7. Gupta S.P. - Fundamentals of statistics, Sultan Chand. Delhi.
  8. Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India
  9. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
  10. Mehdi, B and Prakash A. (2010). Biostatistics in Pharmacology. Practical Manual in experimental and clinical pharmacology. 1st Edition. New-Delhi: Jaypee brothers Medical Publishers
  11. Rao, NSN and Murthy, NS. (2008) 2nd Edition. Applied statistics in health sciences. Jaypee Brothers Medical Publishers (P) Ltd. Bengaluru, New Delhi.
  12. Rick J Turner and Todd A Durham (2008). Introduction to Statistics in Pharmaceutical Clinical trails. Published by the Pharmaceutical Press- An imprint of RPS Publishing, 1 Lambeth High Street, London SE1 7JN, UK
  13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
  14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
  15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana - A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.D.-AYURVEDA PRELIMINARY**

#### **AGADA TANTRA**

**(Toxicology and Forensic Medicine)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

**PART A**

**50 Marks**

1. Introduction to Agadatantra, its sequential development, traditional and contemporary toxicology.
2. Examination of poisons as per contemporary and Ayurvedic methods.
3. Ancient and contemporary classification of Visha.
4. Knowledge about Sthavara visha, Jangama visha and Kritrima visha, their clinical and pathological manifestations and management.
5. Garavisha and Dushi visha, signs, symptoms and management with contemporary relevance.
6. Vishajanya Janapadodhvasaniya Roga (community health problems due to poisons) - environmental pollution, water pollution, soil pollution, air pollution etc, their features and management according to ancient and contemporary concepts.
7. Concept of Viruddhahara with contemporary views.

8. Definition of Vyavahara Ayurveda.
9. Fundamentals of Vyavahara Ayurveda. Courts of law in India and legal procedures.
10. Chaturvinshati upakrama (24 management procedures).

## **PART B**

**50 Marks**

1. Introduction to Forensic medicine.
2. Techniques of pathology, pharmacology, pharmacognosy and microbiology used in toxicology.
3. Death and its medico-legal aspects (Medical Thanatology), Medico-legal autopsy, Legal procedures in clinical forensic medicine.
4. Forensic Science Laboratory:- Structure and functions
5. Introduction to Medical Jurisprudence.
6. Laws related to medical profession. Ancient practice of medical jurisprudence in india.
7. Ancient and contemporary fundamentals of medical ethics.
8. Madya visha (Alcoholism).
9. Diagnosis and Management of food poisoning.
10. General and Emergency medical management of poisoning including preparation, administration and complications of antidotes, antivenoms, antisera.
11. Management of the toxic manifestations caused by the contact poisons (paduka, vastra, abhushana, mukhalepa- vishabadha etc).
12. Diagnosis and management of dermatological manifestations of Visha.
13. Death due to poisoning, duty of physician in poisoning and cases of suspected poisoning.
14. Post mortem findings in poisoning.

## **PRACTICAL**

**100 Marks**

### **Contents:**

Clinical Postings

Case records – 20 cases (Postmortem/ poisoning/dermatological/medico legal cases)

### **Distribution of Marks:**

1. Case Records - (20 Cases)	- 20 Marks
2. Bed side clinical case taking	
a. Long Case	- 20 Marks
b. Short Case	- 10 Marks
3. Identification of specimens, models and Equipments of Jurisprudence importance	- 15 Marks
4. Spotting related to Visha, Upavisha and other Poisonous drugs	- 15 Marks
5. Viva-voce	- 20 Marks
<b>Total</b>	<b>- 100 Marks</b>

### **Reference Books:-**

- |  |                            |
|--|----------------------------|
| 1. Useful Portion of Charak-Sushrut-Vagbhata |                            |
| 2. Dravyaguna Vigyan                         | - Acharya Yadavji          |
| 3. Aushadhigunadharm Shastra                 | - Pt Visvanath Dvivedi     |
| 4. Kriyatmat Aushada parichaya Vigyan        | - Pt Visvanath Dvivedi     |
| 5. Ayurvedic Vyadhi Vigyan                   | - Acharya Yadavji Trikamji |

6. Madhavanidan with Madhukosha commentary
7. Sharangadhara Samhita
8. Yogaratnakara
9. Aushadigunadharma Shastra - Pt Gangadhara Shastri Gune
10. Rasendracintamani
11. Rasaratna samuchhaya
12. Vishavigyan - Dr. Krishna Kumar
13. Related matter of Kautilya Artha Shastra
14. Harmekhlatantra
15. Anupana manjari
16. Ayurvedprakash
17. System of clinical Medicine - Savil
18. Forensic Pharmacy - B.M. Mhithai
19. Hand book of Forensic Medicine and toxicology - Dr. P.V. Chadha
20. Viva Forensic Medicine and toxicology - L.C. Gupta
21. Forensic Medicine and Ethics - J.P. Narena
22. Modi's Medical Jurisprudence and Toxicology
23. The essentials of forensic medicine and toxicology -Dr.K.S. Narayan Reddy
24. Medical Laws and Ethics - Dr. H.S. Mehta
25. M.R.K. Krishnan's Handbook of Forensic Medicine
26. Text book of Medical Jurisprudence and Toxicology - Dr. C.K. Parikh
27. Atlas of Forensic Medicine - Dr. Tomio Watenbe
28. Medico legal Post Mortems (Atlas) - Dr. Parikh and Others
29. Textbook of Forensic Medicine and Toxicology - Dr.V.V. Pillay
30. Textbook of Forensic Medicine and Toxicology - Dr. Karmakar
31. Textbook of Forensic Medicine and Toxicology - Dr. Singhal
32. Textbook of Forensic Medicine and Toxicology - Dr. Krishnan Vij
33. Forensic Pathology - Dr. Bernard Knight
34. Textbook of Forensic Medicine and Toxicology - Lyon's
35. Pocket picture guide to Forensic Medicine - Gower's Medical Publication
36. Forensic Medicine - Simpson Knight
37. Taylor's Principles and Practical of Medical Jurisprudence - J and A Churchis
38. Doctor and Law - Singhal
39. Textbook of Toxicology - Singhal
40. Medicine Harrison's Principal of Internal Medicine
41. Agad Tantra - Dr.Shekhar Namboodri
42. Modern Medical Toxicology - Dr. V.V.Pillay
43. Critical care toxicology - Bruent Wallace
44. Diagnosis and Management of common poisoning - Agarwal wali
45. Colour Atlas of Forensic Medicine - Govindaiah
46. Guidelines of poisons - W.H.O.
47. Doctors patients relationships - Dr.Lavekar
48. Bhavaprakasha.
49. Vishavaidya Jyotsnika - English translation By VPSV Ayurveda college, Kottakkal.
50. Lakshnamritham.
51. Toxicology, Ayurvedic perspective - VPSV Ayurveda college  
Kottakal
52. Text book of Agadatantra - Edited By Dr Huparikar,  
Dr.Joglekar

- |  |   |
|--|---|
| 53. Agadatantra ki Pathyapustaka                                 | - Edited By Dr Huparikar, Dr. Joglekar  |
| 54. Vyavahar Ayurveda Vigyanam                                   | - Dr. Indramohan Jha (Sachchan)         |
| 55. Forensic Medicine  | - Dr. B. Umadathan                      |
| 56. Visha Chikitsa   | - Dr. M. Balakrishnan Nair              |
| 57. Park Text book of Preventive and Social Medicine.            | - K. Park                               |
| 58. Environmental Science and Biotechnology- Theory and Practice | - A.G. Murukesan & C. Rajakumari        |
| 59. Veterinary Toxicology  | - Dr. Satish K. Gargi                   |
| 60. Guide to Drinking Water Quality (3 Volumes)                  | - WHO Publication                       |
| 61. A short Text Book of Medical Entomology                      | - H.S. Bhatti, R. Sehgal, R.C. Mahajan. |

#### **Additional Books for Reference**

- |                          |   |
|--------------------------|---|
| 1. Uddishta Tantram      | – Acharya Pandit Sivadatta Mishra Shastri |
| 2. Vishavaidya Jyotsnika | – VPSV Ayurveda College, Kottakkal        |

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### **M.D.- AYURVEDA FINAL YEAR**

#### **AGADA TANTRA**

#### **(Toxicology and Forensic Medicine)**

#### **PAPER - I      Agada Tantra (Ayurvedic and Contemporary Toxicology)      100 Marks**

1. Agada Tantra, its sequential development during Veda kala, Samhitha kala, Samgraha kala and Adhunik kala.
2. Definition of Visha, properties of visha and its comparison with madya and oja, visha samprapti, visha prabhava, visha-vega, vegantara and visha karmukata (toxicodynamic and toxicokinetic study).
3. Descriptive and comparative study of Upavisha in unison with Contemporary Toxicology.
4. Examination of poisons as per Contemporary and Ayurvedic Methods.
5. Descriptive study of sthavara visha, definition, classifications, classical signs and symptoms of poisoning including vanaspatic (phyto poison), khanija (mineral) and compound sthavara visha.
6. Study of Jangama visha and their sources (Animal poisoning and Zoonotic Diseases). Descriptive study of snakes according to ancient and contemporary knowledge. Causes of snake bite and its types. Composition of snake venom and its pharmacological actions. Signs and symptoms of envenomation and its prognostic signs. Clinical features of Vrischika (scorpion), Luta (spider), Grihagodhika (Lizard), Mushaka (rats), Alarka (dogs), Makshika and Mashaka (mosquitoes) and their pathologic manifestations including their role in the manifestation of communicable diseases. Shanka visha and its management. Visha sankat and Visha Kanya.
7. Garavisha and Dushi visha, their varieties, signs, symptoms and management with contemporary relevance. Detailed study of Allergies including allergic manifestations in the eyes, nose, lungs and skin.

8. Detailed study of Madya visha and substances acting on the nervous system; substance abuse.( Diagnosis, Management and De-addiction)
9. Detailed study of the contemporary knowledge about vishajanya Janpadodhvasaniya roga (community health problems due to poisons - Environmental pollution, water pollution, soil pollution, air pollution, Industrial pollutions etc. their features and management according to ancient and recent concepts.
10. Concept of Virudha aahara, Aahara visha and Satmyasatmyata in contemporary and Ayurvedic views.
11. Conceptual study:- Drug interactions and incompatibility, Pharmacovigilance

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**PAPER – II                      Visha Chikitsa Vigyan (Management of Poisoning)                      100 Marks**

1. Fundamental Principles for treatment of poisoning
2. General and specific treatment of different types of Sthavara visha.
3. General and specific treatment of different types of Jangama visha (animal poisons, insect poisons, snake bites and other zoonotic diseases).
4. Emergency medical management of poisoning including preparation, administration and complications of antivenoms/antisera.
5. Chaturvimsati upakrama (24 management procedures).
6. Management of Garavisha and Dushivisha. Treatment of Allergies including allergic manifestations in the eyes, nose, lungs and skin
7. Diagnosis and Management of Drug Induced Toxicity
8. Management of the toxic manifestations caused by the contact poisons (paduka, vasthra, abharana, mukhalepa- vishabadha etc).
9. Management of food poisoning.
10. Death due to poisoning, Duty of physician in poisoning, in cases of suspected poisoning. Post mortem findings in poisoning
11. Extra -corporeal techniques (dialysis etc) for removal of poisons.

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**PAPER - III                      Vyavahara Ayurveda evam Vidhi Vaidyaka                      100 Marks**

1. Definition of Vyavahara Ayurveda, its evolution in ancient and contemporary periods.
2. Personal identity and its medico-legal aspects
3. Death and its medico-legal aspects (Medical Thanatology)
4. Asphyxial deaths and its medico-legal importance.
5. Death due to starvation, heat and cold, lightening and electricity. Suspended Animation.
6. Medico-legal autopsy.
7. Injuries due to explosions, chemical and nuclear warfare.
8. Medico-legal aspects of injuries and wounds.
9. Impotence and sterility-Its medico-legal aspects. Regulations of Artificial Insemination. Medico –legal aspects of surrogate motherhood.
10. Sexual offences and perversions.

11. Medico-legal aspects of virginity, pregnancy, delivery, abortion, infanticide and legitimacy with related acts.
12. Indian Penal Code, Criminal procedure code and study of related acts like Indian Evidence Act, Pre Natal Diagnostic Test Act, Nursing Home Act, Human Organ Transplantation Act, Drugs and Cosmetic Act 1940, Narcotic drugs and Psychotropic substances Act 1985, Pharmacy Act 1948, Drugs and Magical Remedies (Objectionable Advertisements) Act 1954, Medicinal and Toilet Preparations Act 1955 and Anatomy Act etc. Any related act enacted by the government from time to time.
13. Courts and Legal procedures.
14. Forensic Science Laboratory
15. Medico legal aspects of mental illness
16. Duties and privileges of physician.
17. Structure of Central Council of Indian Medicine, its jurisdiction and functions. Code and Conducts as per the CCIM, Rules and Regulations there under.
18. Respective State Council of Indian Medicine, its structure, power, voluntary duties.
19. Doctor - patient relationship.
20. Rights and privileges of patients; Euthanasia.
21. Professional secrecy and privileged communication.
22. Professional negligence and malpractice
23. Indemnity Insurance scheme.
24. Consumer Protection Act related to medical practice.
25. Ethics as in classics. Types of physicians and methods of identification, Pranabhisara and Rogabhisara Physicians, qualities of physician, responsibilities of Physicians, Chaturvidha vaidya vriti, duties of physicians towards patients, Vaidya sadvritam, Apujya Vaidya who is accepting fees, relationship with females.

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#### **PAPER – IV**

#### **Aushadha Yoga Vigyan**

**100 Marks**

1. Study of process for sodhana, marana and samskarana of poisonous drugs.
2. Pharmacodynamics of different formulations used in Agadatantra
3. Study of pharmacology and usage of antidotes as per the Ayurvedic and contemporary science.
4. Fundamentals of pharmaceuticals according to Ayurvedic and contemporary point of view.
5. Chemical, analytical, laboratory examination of poisons and suspicious substance.
6. Introduction of different instruments /equipments used in the examination of poisons.
7. Introduction to Clinical toxicology
8. Introduction to Experimental toxicology
9. Introduction to Toxicology - genomics
10. Survey and study of the traditional and folklore vishachikista sampradaya.

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#### **Content of Practical/Demonstration**

1. Identification of specimens models and equipments of toxicological and jurisprudence importance.

2. Practical training in postmortem examination (10 cases)
3. Regular clinical postings in the Agadatantra OPD / IPD
4. Medico-legal cases (20 cases)
5. Chemical Identification of various acids, alkalies, alcohols – Hydrochloric acid, Nitric acid, Sulphuric acid, Ascorbic acid, Sodium Hydroxide and Potassium Hydroxide
6. Detection of minerals Copper, Mercury, Lead, Arsenic and their compounds.
7. Physical and Chemical analysis of Dattura, Karaveera, Vatsanabha, Jayapala, Arka and Bhallataka with Microscopy, powder microscopy, TLC, solvent extraction, detection of Phenol, tannins etc. (10 studies)
8. Detection of human blood, hair, semen and other biological secretions of Forensic importance.
9. Herbarium of 15 sthavara vishas and 10 agadas.
10. Preparation of two Agada yogas

#### **Clinical Postings**

1. Modern medical hospitals – 2 weeks  
(For emergency management of poisoning)
2. Postmortem postings - 2 weeks
3. Court postings - 1 week

#### **Visit to**

1. Forensic Laboratory
2. Anti snake venom serum manufacturing Unit.

#### **Pattern of practical examination**

- |   |                    |
|---|--------------------|
| 1. Post mortem / Medico-legal case record and clinical record                     | - 10 Marks         |
| 2. Identification of specimens models and equipments of jurisprudence importance. | - 20 Marks         |
| 3. Spotting related to Visha, Upavisha and others poisonous drugs                 | - 20 Marks         |
| 4. Thesis presentation  | - 25 Marks         |
| 5. Viva-voce  | - 25 Marks         |
| <b>Total</b>  | <b>- 100 Marks</b> |

#### **REFERENCE BOOKS:**

1. Useful Portion of Charak-Sushrut-Vagbhata
2. Dravyaguna Vigyan - Acharya Yadavji
3. Aushadhigunadharm Shastra - Pt Visvanath Dvivedi
4. Kriyatmat Aushada parichaya Vigyan - Pt Visvanath Dvivedi
5. Ayurvedic Vyadhi Vigyan - Acharya Yadavji Trikamji
6. Madhavanidan with Madhukosha commentary
7. Sharangadhara Samhita
8. Yogaratnakara
9. Aushadigunadharm Shastra - Pt Gangadhara Shastri Gune
10. Rasendracintamani
11. Rasaratna samuchhaya

12. Vishavigyan - Dr. Krishna Kumar
13. Related matter of Kautilya Artha Shastra
14. Harmekhlatantra
15. Anupana manjari
16. Ayurvedprakash
17. System of clinical Medicine - Savil
18. Forensic Pharmacy - B.M. Mhithai
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20. Viva Forensic Medicine and toxicology - L.C. Gupta
21. Forensic Medicine and Ethics - J.P. Narena
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23. The essentials of forensic medicine and toxicology - Dr.K.S. Narayan Reddy
24. Medical Laws and Ethics - Dr. H.S. Mehta
25. M.R.K. Krishnan's Handbook of Forensic Medicine
26. Text book of Medical Jurisprudence and Toxicology - Dr. C.K. Parikh
27. Atlas of Forensic Medicine - Dr. Tomio Watenbe
28. Medico legal Post Mortems (Atlas) - Dr. Parikh and Others
29. Textbook of Forensic Medicine and Toxicology - Dr.V.V. Pillay
30. Textbook of Forensic Medicine and Toxicology - Dr. Karmakar
31. Textbook of Forensic Medicine and Toxicology - Dr. Singhal
32. Textbook of Forensic Medicine and Toxicology - Dr. Krishnan Vij
33. Forensic Pathology - Dr. Bernard Knight
34. Textbook of Forensic Medicine and Toxicology - Lyon's
35. Pocket picture guide to Forensic Medicine - Gower's Medical Publication
36. Forensic Medicine - Simpson Knight
37. Taylor's Principles and Practical of Medical Jurisprudence - J and A Churchis
38. Doctor and law - Singhal
39. Textbook of Toxicology -Singhal
40. Medicine Harrison's Principal of Internal Medicine
41. Agad Tantra - Dr. Shekhar Namboodri
42. Modern Medical Toxicology - Dr. V.V.Pillay
43. Critical care toxicology - Bruent Wallace
44. Diagnosis and Management of common poisoning - Agarwal wali
45. Colour Atlas of Forensic Medicine - Govindaiah
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47. Doctors patients relationships - Dr.Lavekar
48. Bhavaprakasha.
49. Vishavaidya Jyotsnika -- English translation By VPSV Ayurveda College, Kottakkal.
50. Lakshnamritham.
51. Toxicology, Ayurvedic perspective - VPSV Ayurveda College, Kottakkal
52. Text book of Agadatantra - Edited By Dr Huparikar, Dr. Joglekar
53. Agadatantra ki Pathyapustaka - Edited By Dr Huparikar, Dr. Joglekar
54. Vyavahar Ayurveda Vigyanam - Dr.Indramohan Jha (Sachchan)
55. Forensic Medicine - Dr. B. Umadathan
56. Visha Chikitsa - Dr. M. Balakrishnan Nair
57. Park Text book of Preventive and Social Medicine. - K. Park

58. Environmental Science and Biotechnology - Theory and Practice  
- A.G. Murukesan & C. Rajakumari
59. Veterinary Toxicology  
- Dr. Satish K. Gargi
60. Guide to Drinking Water Quality (3 Volumes) - WHO Publication
61. A short Text Book of Medical Entomology - H.S. Bhatti, R. Sehgal, R.C. Mahajan.

**Additional Books for Reference**

1. Uddishta Tantram – Acharya Pandit Sivadatta Mishra Shastri
2. Vishavaidya Jyotsnika – VPSV Ayurveda College, Kottakkal

**2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

**2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

**2.13 Records**

Relevant records are to be maintained

**2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.
3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.
4. For approving the title a scrutiny Committee shall be constituted by the University.
5. The University should display the approved synopsis of dissertation on their website.
6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.
7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.

9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.

10. The dissertation shall consist critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.

11. The dissertation shall consist of not less than forty thousand words.

12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.

13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.

14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.

15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.

16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.

17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.

18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

## **2.20 Journals**

### **Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamya@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068

3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in*/Open Access Peer Reviewed E-Journal. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

## **3. EXAMINATIONS**

### **3.1 Eligibility to appear for examinations [including Supplementary]**

#### **A. Preliminary examination:**

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

#### **B. Final examination:**

For appearing final year examination 80 % attendance in each theory and practical subjects in 2<sup>nd</sup> & 3<sup>rd</sup> years separately is required

### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

#### **Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

#### **Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

- II Regular clinical training in the hospital for student of clinical subject.
- III Practical training of research work carried out in the department, for student of non clinical subject.
- IV Active participation in various seminars, symposia and discussions.
- V Finalization of topic of dissertation and synopsis.
- VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

### **SCHEDULE OF EXAMINATIONS**

- a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.
- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

### **CONDUCT OF EXAMINATION**

- 1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
- 2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.
- 3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.  
The pattern is long essay for 20 marks -one question  
Short essay 10 marks - Eight questions  
Total 9 questions for 100 marks

**3.4 Papers in each year**

Given under clause No.2.10

**3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

**3.6 Model question paper for each subject with question paper pattern**



QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Agada Tantra evum Vidhivaidyaka)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Enlist sthavara visha adhishtanas with suitable examples and write the lakshanas produced by each adhishtanas

**Short Essays**

**(8x10=80)**

2. Explain the signs and management of vishadooshitha bhoomi according to ancient and recent methods
3. Explain dooshivisha lakshana and chikitsa along with its contemporary relevance
4. Explain examination of a witness in a court of law
5. Explain alarka visha lakshana, samprapthi and chikitsa
6. Describe the duties of a registered medical practitioner
7. Explain the methods of elimination of poison by excretion
8. Explain the constitution, service and functions of forensic science laboratory
9. Explain the signs and symptoms of acute arsenic poisoning and point out the difference between cholera

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Agada Tantra evum Vidhivaidyaka)  
(..... scheme)**

**Paper I – Agada Tantra (Ayurvedic and Contemporary Toxicology)**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain in detail the definition, signs & symptoms, contemporary relevance and management of garavisha

**Short Essays**

**(8x10 = 80)**

2. Explain the action of visha gunas in the light of properties of snake venom as per modern toxicology
3. Explain the features and management of visha dooshitha jala as per ancient and recent concepts
4. Explain the concept of virudhahara in contemporary and Ayurvedic views
5. Explain vrischika damsha lakshna and chikithsa as per Ayurvedic classics
6. Enumerate abortifacient poisons. Explain any two among them
7. Explain asubha kala, desha, sakuna and dootha lakshanas in sarpadamsa according to Ayurvedic classics and malayala vishachikitsa grandhas
8. Compare alarka visha samprapthi along with the pathogenesis of rabies
9. Explain the diagnosis of poisoning in a dead person according to modern toxicology

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Agada Tantra evum Vidhivaidyaka)  
(..... scheme)**

**Paper II – Visha Chikitsa Vigyan (Management of Poisoning)**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Elaborate the detailed management of garavisha janya dooshivisha with contemporary applications

**Short Essays**

**(8x10 = 80)**

2. Explain management of viruddha ahara with examples of food combination
3. Explain the management of Kupeelu poisoning and Gunja poisoning
4. Mention clinical features and treatment of a viper bite
5. Explain preparation, administration and complications of antivenom
6. Enumerate Clinical features of lead poisoning and its management
7. Explain Gara visha in general and its detailed management
8. Explain the procedures arishtabandhana, prachana and achooshana
9. Explain Dasavidha chikithsa in lutha visha

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Agada Tantra evum Vidhivaidyaka)  
(..... scheme)**

**Paper III – Vyavahara Ayurveda evam Vidhi Vaidyaka**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe classification of Injuries and explain in detail medicolegal aspects of wounds

**Short Essays**

**(8x10 = 80)**

2. Describe the process of identification of an unknown dead body.
3. Define Rape and explain in detail examination of a rape victim.
4. Describe Medical evidence in detail with its classification.
5. Explain modes of death and organ transplantation.
6. Mention structure of CCIM its jurisdiction and functions
7. Explain the Medical Ethics as in classics and importance of consent in medical practice
8. Discuss professional negligence and malpractice.
9. Explain Asphyxial deaths and its medicolegal importance.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Agada Tantra evum Vidhivaidyaka)  
(..... scheme)**

**Paper IV – Aushadha Yoga Vigyan**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the classification, types and action of antidotes with suitable examples according to modern Toxicology. Explain prathivisha and prathyoushadha as per agadatantra

**Short Essays**

**(8x10 = 80)**

2. Explain the qualitative colour tests using in the detection of poisons
3. Explain the therapeutic action of moorvadi choorna in garavisha
4. Explain thin layer chromatography in the detection of poisons
5. Mention the ingredients, methodology and application of tharuna bhaskara gulika
6. Explain the chemical tests using in the detection of metallic poisons
7. Explain the significance of 'dharaprayoga' in vishachikitsa as per malayala visha chikitsa grandhas
8. Explain the action of panchavalkaadi agada in mandali damsra vana
9. Explain the importance of 'oothu chikitsa' (blowing of medicinal air) as per keralaleeya visha chikitsa.

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

### **3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

## **4. INTERNSHIP**

Not applicable

## **5. ANNEXURES**

### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised

University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study

7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman

8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.
12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

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## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Vachaspati – Kayachikitsa  
(M.D. (Ayurveda) - Medicine)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Vachaspati – Kayachikitsa (M.D. (Ayurveda) – Medicine)

### 2.2 Objectives:

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

### 2.9 Teaching learning methods

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## **2.10 Content of each subject in each year**

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**  
**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

#### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

#### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

#### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

#### **4. Scientific writing and publication skills.**

- a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
- b. Different types of referencing and bibliography.
- c. Thesis/Dissertation: contents and structure
- d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)

**5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati

Aushadhi-yog Parikshana Paddhati

Swastha, Atura Pariksha Paddhati

Dashvidha Parikshya Bhava

Tadvidya sambhasha, vadmarga and tantrayukti

**6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**

**7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

a. Panchamahabhuta and tridosha.

b. Concepts of rasa, guna, virya, vipak, prabhav and karma

c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.

**8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.

**9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).

**10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**

**11. Introduction to latest Trends in Drug Discovery and Drug Development**

-Brief information on the traditional drug discovery process

-Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology

-Brief introduction to the process of Drug development.

**12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies  
 Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies  
 Randomized Controlled Trials (RCT) & their types  
 Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.  
 Errors and bias in research.  
 New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)  
 Phases of Clinical studies: 0,1,2,3, and 4.  
 Survey studies –  
 Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

- 13.** Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
 National Pharmacovigilance Programme for ASU drugs.
- 14.** Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
 Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
- 15.** Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

- 1.** Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
- 2.** Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
- 3.** Scales of Measurements- nominal, ordinal, interval and ratio scales.  
 Types of variables – Continuous, discrete, dependent and independent variables.  
 Type of series – Simple, Continuous and Discrete
- 4.** Measures of Central tendency – Mean, Median and Mode.
- 5.** Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
- 6.** Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
- 7.** Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
- 8.** Scales of Measurements- nominal, ordinal, interval and ratio scales.  
 Types of variables – Continuous, discrete, dependent and independent variables.  
 Type of series – Simple, Continuous and Discrete
- 9.** Measures of Central tendency – Mean, Median and Mode.

**10. Variability:** Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation

**11. Non parametric methods:** Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.

Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:** Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography:** computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

### **PRACTICAL**

**100 Marks**

**Teaching hours – 120**

### **I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and toxicology
<b>5</b>	Biochemistry (Clinical)

	Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
6	Clinical Pathology Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
7	Imaging Sciences Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
8	Clinical protocol development

## II. MEDICAL STATISTICS

**Practical hours - 20**

**Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.**

**Records to be prepared.**

**Distribution of marks (Practical):**

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

1. Aushotosh Kar "Pharmacognos & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
4. Kokate, CK., Purohit, AP, Gokhale, SB (2010). Pharmacognosy. Nirali Prakashan. Pune.
5. Kokate, CK., Khandelwal and Gokhale, SB (1996). Practical Pharmacognosy. Nirali Prakashan. Pune.
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7. Tyler V C., Brady, L R., and Robers J E., Pharmacognosy, Lea and Febiger, Philadelphia.
8. Tyler VE Jr and Schwarting AE., Experimental Pharmacognosy, Burgess Pub. Co, Minneapolis, Minnesota.
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10. Wallis T E, Analytical Microscopy, J & A Churchill limited, London.
11. Wallis T E., Text Book of Pharmacognosy, J & A Churchill Limited, London.
12. WHO guidelines on good agricultural and collection practices- (GACP) for medicinal plants (2003). World Health Organization- Geneva.
13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1 to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
2. Brain, KR and Turner, TD. (1975). The Practical Evaluation Phytopharmaceuticals. Wright Sciencetechnica, Bristol.
3. Galen Wood Ewing (1985). Instrumental Methods of Chemical Analysis. McGraw- Hill College ; Fifth edition
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6. Kapoor, RC (2010). Some observations on the metal based preparations in Indian System of Medicine. Indian Journal of Traditional Knowledge. 9(3): 562-575
7. Khopkar, S. M. Analytical Chemistry, New Age International Publishers , 3 rd edition
8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
9. Mahadik KR, Bothara K G. Principles of Chromatography by, 1st edition, Nirali Prakashan.
10. Qadry JS and Qadry S Z., Text book of Inorganic Pharmaceutical and Medicinal Chemistry, B. S. Shah Prakashan, Ahmedabad.
11. Quality Control Methods for Medicinal Plant Material. Reprint (2002). WHO Geneva.
12. Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
15. Stahl E., Thin Layer Chromatography - A Laboratory Handbook, Springer Verlag, Berlin.
16. Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo and Dev Dutt

Rakesh (2008). Extraction Technologies for Medicinal and Aromatic Plants  
INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste

### **Biochemistry and Laboratory techniques:**

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
3. David Frifelder. W. H. Freeman. (1982). Physical Biochemistry by; 2 edition
4. David Sultan (2003). Text book of Radiology and Imaging, Vol-1, 7th Edition.
5. Deb, A.C., Fundamentals of Biochemistry, Books and Allied (P) Ltd, 2002.
6. Harold Varley. Practical Clinical Bio-chemistry
7. Kanai L.Mukherjee. Clinical Pathology:, Medical Laboratory Technology Vol. I.Tata Mc Graw Hill 1996, New Delhi.
8. Gradwohl, Clinical Laboratory-methods and diagnosis, Vol-I
9. Clinical Biochemistry -Sabitri Sanyal, Clinical Pathology, B.I.Churchill Livingstone (P) Ltd, New Delhi.2000.
10. Satyanarayanan,U. Essentials of Biochemistry, Books and allied(P) Ltd.2002
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13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
3. Altick and Fenstermaker. (2007). *The Art of Literary Research*. 4th ed. W. W. Norton. Castle, Gregory. *Blackwell Guide to Literary Theory*. Blackwells,
4. Bowling, A. (2002). Research Methods in Health (2nd ed). Buckingham: Open University Press.
5. Day R.A. How to write a scientific paper. Cambridge University Press.
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7. Deepika Chawla and Neena Sondhi. (2011). Research Methods- Concepts and cases. New Delhi: Vikas Publishing House.
8. Greenhalgh, T. (2006) How to Read a Paper: The Basics of Evidence-Based Medicine. (3rd ed) Blackwell
9. Kothari - CR (2004). Research Methodology- Methods and Techniques (Second Revised Edition). New Age International Publishers- New Delhi.
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12. Relevant portions of Ayurvedic Samhitas and other texts

### **Drug research and development:**

1. RICK NG, (2009). DRUGS-from discovery to approval. John Wiley & Sons, Inc.,

Hoboken, New Jersey

2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
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6. Gazette Extraordinary Part- II-Section 3 - Sub section (i) December 2008. Govt of India. AYUSH Guidelines on safety studies- Rule 170 of Drugs and Cosmetics Act.
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<http://browse.oecdbookshop.org/oecd/pdfs/free/9740801e.pdf>(latest version)
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[http://www.oecd.org/document/63/0,2340,en\\_2649\\_34381\\_2346175\\_1\\_1\\_1,00.html](http://www.oecd.org/document/63/0,2340,en_2649_34381_2346175_1_1_1,00.html)
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13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
14. Ravindran R.: X-Pharm (Software), Indian Journal of Pharmacology, *JIPMER, Pondicherry.*

### **Biotechnology and Bio-informatics:**

1. Angela M. Meireles A (2009). Extracting Bioactive compounds for food products. Theory and applications. CRC- Press Taylor and Francis Group.
2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978- 81-8318-831-9
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9. <http://www.dsir.nic.in/reports/tifp/database/metallo.pdf>.
10. [www.consort-statement.org](http://www.consort-statement.org)
11. [www.strobe-statement.org](http://www.strobe-statement.org)
12. [www.icmr.nic.in](http://www.icmr.nic.in)

#### **Clinical Evaluation:**

1. CDSCO, Good Clinical Practices For Clinical Research in India, Schedule Y (Amended Version – 2005), <http://cdsco.nic.in/html/GCP1.html>
2. Ethical Guidelines for Biomedical Research on Human subjects. (2000). Indian Council of Medical Research- New Delhi.
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9. William C. Scheffer Introduction to Clinical Researchs

#### **Medical Statistics:**

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2. Armitage P, Berry G, Matthews JNS: *Statistical Methods in Medical Research*. Fourth edition. Oxford, Blackwell Science Ltd; 2002
3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
4. Bradford Hill – Basic Medical Statistics
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7. Gupta S.P. - Fundamentals of statistics, Sultan Chand. Delhi.
8. Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India

1. Understanding of fundamental concepts of Kayachikitsa like Vriddhi and Kshaya of Dosha, Dushya, Mala with Amshaamsha Kalpana. Srotodushti, Khavaigunya, Agni, Ama (Saama and Nirama Dosha, Dhātu & Mala). Aavarana, Rogamarga, Ashayapakarsha, Dosha Gati, Kriyakala. Aushadha Sevana Kala, Anupana, Pathya-Apathya and their scientific relevance during health and disease.
2. Detailed knowledge of Rogi Roga Pariksha including detailed history taking and systemic examination of patient. Clinical implementation of Dwividha Pariksha, Trividha Pariksha, Chaturvidha Pariksha, Panchavidha Pariksha, Shadvidha Pariksha, Ashtavidha Pariksha, Dashvidha Pariksha Bhavas and Prakrityadi Dashvidha Pariksha.
3. Principles of Kayachikitsa in disease management including Shodhana, Shamana and Naimittika Rasayana.
4. Introduction of the basic principles of Modern medicine, Homeopathy, Unani, Siddha, Tibetan Medicine, Yoga and Naturopathy and their relevance in light of the basic principles of Ayurvedic medicine.

**PART B****50 Marks**

1. Chikitsa Siddhanta of Pranavaha, Annavaha, Udakavaha, Rasadi Dhatuvaha, Malavaha & Manovaha Srotovikara
2. Emergency medicine: Acute Severe Asthma, pulmonary oedema, myocardial infarction, cerebro-vascular accidents, water and electrolyte imbalance, haemorrhage, syncope, seizure, coma, hyperpyrexia, hypertensive encephalopathy.
3. Knowledge of conducting various medical procedures like infusions, tapping, lumbar puncture, Ryle's tube insertion, catheterization, tractions, water seal drainage, Cardio Pulmonary Resuscitation.
4. Basic knowledge of underlying principles of ECG, TMT, echo cardiography, vascular doppler studies, EEG, EMG, X-Ray, USG, CT scan, MRI, PET and their interpretation.
5. Knowledge of common Ayurvedic formulations and preparations used in treatment:  
**Churna** - Triphala, Sitopaladi, Lavanbhaskara, Hingvashtaka, Avipattikara, Gangadhara, Shaddharana, Sudarshana, Panchasakara, Ajmodadi.  
**Kashaya** - Dashamula, Rasnasaptaka, Asanadi, Pathyadi, Phalatrikadi, Punarnavashtaka, Gojivhadi, Mahamanjishthadi, Drakshadi Kashaya.  
**Asavas-Arista** - Amritarishta, Kanakasava, Chitrakasava, Saraswatarishta, Ashwagandharishta, Chandanasava.  
**Vati** - Sanjivani, Chandraprabha, Agnitundi, Chitrakadi, Khadiradi, Vyoshadi, Shankha Vati, Shiva Gutika.  
**Guggula-Kalpana** - Triphala guggula, Kaishora guggula, Trayodashanga guggula, Simhanada guggula, Yogaraja guggula, Gokshuradi guggula, Kanchanara guggula.  
**Rasaushadhi** - Tribhuvanakirti Rasa, Arogyavardhini Rasa, Shwasakuthara Rasa, Rasamanikya Rasa, Smritisagara Rasa, Lakshmilasa Rasa, Sutshekhara Rasa, Pravala Panchamrita-Parpati, Hemagarbhapottali-Rasa.  
**Taila** - Mahanarayana Taila, Pindataila, Prasarinyadi Taila, Ksheerabala Taila, Brihat Saindhavadi Taila, Panchaguna Taila, Amritadi Taila, Marichyadi Taila, Mahamasha Taila.  
**Ghrita** - Mahatriphaladi Ghrita, Brahmi Ghrita, Panchtikta Guggulu Ghrita, Sukumara Ghrita, Dadimadya Ghrita, Kankari Ghrita, Kalyanaka Ghrita.  
**Lehya** - Chyavanaprasha Avaleha, Kushmanda Avaleha, Ashwagandha Avaleha, Agastya Hareetaki Rasayana, Drakshavaleha, Vasavaleha, Amrita-Bhallataka Rasayana

**PRACTICAL****100 Marks****Content:**

Daily hospital duties in OPD, IPD and – 25 patients  
casualty Bed side case taking

**Distribution of Marks:**

1. Case Records of 25 Patients in detail - 20 Marks
2. Bed side clinical case taking  
a. Long Case - 20 Marks  
b. Short Case - 10 Marks
3. Medical procedure/Laboratory work - 15 Marks
4. Instruments and spotting - 15 Marks

5. Viva-voce

- 20 Marks

**Total**

**- 100 Marks**

**Reference Books:-**

Charak Samhita	-Cakrapanidutta commentry
Sushrut Samhita	-with all available commentaries.
Ashtang Samgraha	-Indu commentary
Ashtang Hridaya	-Arundutta and Hemadri commentry
Cikitsadarsha	- Pandit Rajesvardutta Shastri
Kayachikitsa	- Ramaraksha Pathak
Rog Pariksha Vidhi	- Priyavrat Sharma
Panchakarma Vigyan	- Haridas Sridhar Kasture
Ayurved Nidan Chikitsa Siddhanta	- Prof. R.H.Singh.
Kayachikitsa Vol. I-IV.	- Prof. Ajay Kumar Davidson's
Principles and Practice of Medicine.	
API Text Book of Medicine.	
Harrison's Text Bok of Medicine.	
Cecil Text Book of Medicine.	
Relevant texts of concerned subjects.	

**Additional Books for Reference**

1. Concept of Mind - Ed. Dr. C R Agnives
2. Sahasrayogam - Dr. Prabhakara Rao
3. Parva – Clinical presentations on Joint Diseases – Dr. S. Gopakumar
4. Samsidhi – Classical Thoughts and Clinical Targets - Dr. S. Gopakumar
5. Consultations in Ayurvedic Dermatology – Dr. P. M. Madhu
6. Gulmam - Dr. P. M. Madhu
7. Nirnnaya – Manual of Clinical examinations in Ayurveda - Dr. P. M. Madhu
8. Rasayana and Vajikarana – Rejuvenation and Virile Therapy – Dr. Giri. P. V
9. Raktapitta and its treatments - Abhilash M
10. Aavaranam - Abhilash M, Lakshmi V,
11. Myopathy - An Ayurvedic Perspective - Abhilash M

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**M.D.- AYURVEDA FINAL YEAR**

**KAYACHIKITSA**  
**(Medicine)**

**PAPER - I**

**Fundamentals of Kayachikitsa**

**100 Marks**

1. Rogi-Roga Pariksha: Nidan Panchak, Trividha pariksha, Ashtavidhpariksha, Dashvidhpariksha in the light of recent advances. Clinical methods-Detailed history taking and patient examination, Systemic examination as per ayurveda and recent advances.

2. Interpretation of common investigations: ECG, Echo cardiography, TMT, Spirometry, X-ray, USG, CT-Scan, MRI, EEG, EMG, in different pathological conditions.
3. Detailed Knowledge of Principles of Chikitsa in Ayurveda. Types of Chikitsa. Principles and practices of Rasayana and Vajikarna.
4. National Health Programmes and prospective role of Ayurveda services and therapeutics in them.
5. Medical ethics, Common laws and regulations applicable to clinical practice.
6. Elaborate knowledge of undertaking common medical procedures like Ryle's tube feeding, tapping, transfusions, catheterization, tractions.
7. Ayurveda Dietetics: importance of Pathya, Apathya and Anupana.
8. Drug-drug interactions and adverse drug reactions, Iatrogenic disorders.

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## PAPER – II

## Samanya Roga Chikitsa

100 Marks

Nidana/ Chikitsa including Nidana Parivarjana, Pathya, Apathya, Chikitsa siddhanta, Shamana, Shodhana, Panchakarma, Rasayana and Atyayika Chikitsa (Anupana, Drug/Non-drug) as per Ayurvedic and conventional therapeutics of following Srotogata vyadhi:

1. Pranavahasrotas: Shwasa, Hikka, Kasa, Rajayakshma, Hridroga, Parshwashoola, Urakshata, Svarabheda  
Cardio-respiratory system: Bronchitis, Bronchiectasis, Bronchial asthma, COPD, Cor-pulmonale, Pneumonias, Occupational lung diseases, Pulmonary tuberculosis, Congenital Heart disorders, IHD, RHD- Valvular diseases, Cardiac failures, Cardiomyopathy, Pericarditis, Endocarditis, Hypertension,.
2. Annavahasrotas: Agnimandya, Ajirna, Aruchi, Amadosha, Amlapitta, Chhardhi, Shoola, Grahani.  
Gastrointestinal disorders: GERD, APD, Malabsorption Syndrome,
3. Udakavahasrotas: Trishna, Shotha, Udararoga, water and electrolyte imbalance
4. Rasavaha srotas: Jwara, Amavata, Pandu, Madatyaya, Anaemias, Rheumatoid arthritis, Substance abuse disorders.
5. Raktavaha Srotas: Raktapitta, Kamala, Vatarakta, Kushtha, Kshudraroga, Sheetpitta, Udarda, Kotha, Visarpa, Shvitra. Haemopoietic disorders, Bleeding and Coagulation disorders, Leukaemias, Thrombocytopenia, Disorders of Bone Marrow, Hepatobiliary disorders, Hepatitis, Cirrhosis, Cholecystitis, Liver abscess, Jaundice, Dermatological disorders, Parasitic, Infective, Allergic, Autoimmune skin disorders, Eczemas.
6. Mamsa-Medovahasrotas: Medoroga, Sthaulya, Prameha, Galaganda, Gandamala, Urustambha, Diabetes mellitus, over weight .
7. Asthi-Majjha vahasrotas: Asthikshaya, Sandhigatavata, Osteoarthritis, Osteopenia
8. Shukravahasrotas: Such as Kalibya, Dwajabhanga. Impotence
9. Mutravahasrotas: Mutrakricchra, Mutraghata, Ashmari, Urinary disorders: UTI, Lithiasis, ARF, CRF, Uraemia, BPH.
10. Purishvaha srotas: Atisara, Pravahika, Anaha, Adhamana, Krimi, Udavarta, Enteritis, Dysenteries, Ulcerative colitis, IBS, Worm infestation.

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Comprehensive knowledge of etiology, demography, pathogenesis, symptomatology, complications, investigations, diagnosis and drug/non-drug management of following diseases as per Ayurveda/ Conventional therapeutics:

1. Vata-Vyadhi- Pakshavadha, Adharanga Vata, Sarvanga Vata, Ananta Vata, Gata Vata, Gridhrasi, Ardita, Akshepaka, Apatantraka, Ekangvata, Vishvachi, Avabahuka, Avarana.  
Musculoskeletal disorders: Myopathies, G B Syndrome, Muscular dystrophies, Lumbago  
Neurological disorders: Neurodegenerative disorders like Alzheimer's, Parkinsonism, CVA, Neuropathies, Facial palsy, Motor Neuron Diseases, Epilepsy, Sciatica.
2. Sankramakroga: Sheetala, Masoorika, Updansha, Phiranga, Gonorrhea, Chancroids, Syphilis,
3. Manasa vyadhi; Unmada, Apasmara, Atatvavinivesha, Mada, Moorcha, Sanyasa.  
Common psychiatric disorders: Classification of psychiatric ailments. Disorders of thought like Schizophrenia. Disorders of Mood like Mania, Depression. Neurosis, personality disorders, psychosexual disorders.
4. Metabolic disorders: Gout, Dyslipidaemia, Atherosclerosis, Obesity.
5. Endocrinal disorders; Disorders of Pituitary, Thyroid, Adrenal Medulla, Reproductive hormones.
6. Parasitic/Infective/Communicable disorders: Shlipada, Filariasis, Vishama Jvara, Malaria, Manthara Jwara, Enteric Fever, Dengue, Chickenpox, Measles, Influenza, Kalaazar, Mumps, Rabies, Poliomyelitis, Plague, Meningitis, Encephalitis, Chickungunya, HIV/AIDs, Common worm infestations.
7. Common neoplastic disorders and their management strategies. Role of Ayurveda medicines in cancer care including palliative care.
8. Autoimmune diseases: Myopathies, Rheumatic fever, SLE.
9. Common poisonings and their management like Insecticide/Pesticide poisoning, Snake poisoning, Vegetable and chemical poisoning.
10. Janapadodhvamsa Vikara. Environmental diseases and their management.

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Critical care medicine, Management of medical emergencies, ICU services, Field medical services

1. Hospital management strategies, Infrastructure, use of IT technology, essential manpower, equipment, Patient care, management and coordination with contemporary health institutions and field institutions.
2. National Health Campaigns of AYUSH and components under NRHM.
3. Clinical Research in Kayachikitsa and its application in clinical medicine as per new evidence base in different systemic disorders.
4. New emerging health challenges and ayurvedic medicines: Chickangunya, HIV/AIDs, Swineflu, Chickenflu, Dengue, Restless leg syndrome, Sick building syndrome, Fibromyalgia.
5. Role of Ayurveda in immune-protection, immuno-modulation and in management

of other allergies and immunological disorders.

6. Indications and importance of Organ transplantation, Ethical and legal issues involved.

7. Knowledge of Geriatric care and terminal care medicine.

8. Basic knowledge of Gene therapy, Stem cell therapy, Genetic modeling and chromosomal disorders in different disease conditions.

9. Radio-isotopes, disease and tumor markers in diagnosis and assessment of therapy.

10. Scope and methods of independent and collaborative research in Kayachikitsa.

11. Disaster management strategies.

12. Application of advances in Rasayana and Vajikarana therapies

13. Application of emerging trends in Panchakarma in medical management.

14. Physical medication and rehabilitation.

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## **PRACTICALS**

Practicals shall be held to evaluate the patient care, diagnostic and treatment expertise of the student. It should also be taken as a chance to evaluate the clinical skills.

### **Pattern of practical examination**

A. Clinical Ability Evaluation - 60 marks based on

- |   |             |
|---|-------------|
| 1. Case records of 40 IPD Patients in Detail                  | : 10 marks  |
| 2. Long case History-1  | : 20 Marks  |
| 3. Short Case history-1                                       | : 10 Marks  |
| 4. Medical procedures demonstration/<br>Panchakarma procedure | : 20 Marks. |

B. Academic Competence evaluation - 40 marks based on:

- |                                      |             |
|--------------------------------------|-------------|
| 1. Viva                              | : 30 Marks. |
| 2. Teaching and communication skills | : 10 Marks. |

**Total : 100 Marks**

### **REFERENCE BOOKS:**

- |   |                                  |
|---|----------------------------------|
| 1. Relevant portions of Brihatrayi and Laghutrayi with commentaries |                                  |
| 2. Cikitsadarsha  | - Pandit Rajeshvar Dutta Shastri |
| 3. Kayachikitsa   | - Ramaraksha Pathak              |
| 4. Rog Pariksha Vidhi   | - Priyavrat Sharma               |
| 5. Panchakarma Vigyan   | - Haridas Sridhar Kasture        |
| 6. Ayurvediya Nidana- Chikitsa Siddhanta                            | - Prof. R.H.Singh.               |
| 7. Kayachikitsa Vol. 1 and 2  | - Prof. R.H.Singh.               |
| 8. The Holistic Principles of Ayurvedic Medicine                    | - Prof. R.H.Singh.               |
| 9. Essentials of Kayachikitsa -II, Vol. 1                           | - Dr. Aruna                      |
| 10. Kayachikitsa Vol. I-IV.   | - Prof. Ajay Kumar               |
| 11. Panchakarma Therapy   | - Prof.R.H.Singh                 |
| 12. Panchakarma Illustrated   | - Prof.G.Shrinivasa Acharya      |
| 13. Practice of Ayurvedic Medicine(Kayachikitsa)                    | -Prof.A.K.Tripathi               |
| 14. Nidanachikitsa Hastamalaka                                      | - Prof. R.R.Desai                |
| 15. Clinical Methods in Ayurveda                                    | - Prof. K.R. Srikantamurthy      |
| 16. Aushadhi Gunadharma Shastra                                     | - Gangadhar shastri Gune         |

17. Introduction to Kayachikitsa - Prof. C. Dwarakanath
18. Samprapti lakshnanayoh Sambandhah - Prof. Sadashiv Sharma
19. Nidana Panchak - Prof. S.C.Dhyani
20. Kayachikitsa - Prof. S.C.Dhyani
21. Davidson's Principles and Practice of Medicine.
22. API Text Book of Medicine.
23. Harrison's Text Book of Medicine.
24. Cecil Text Book of Medicine.
25. Relevant texts of concerned subjects.

#### **Additional Books for Reference**

1. Concept of Mind - Ed. Dr. C R Agnives
2. Sahasrayogam - Dr. Prabhakara Rao
3. Parva – Clinical presentations on Joint Diseases – Dr. S. Gopakumar
4. Samsidhi – Classical Thoughts and Clinical Targets - Dr. S. Gopakumar
5. Consultations in Ayurvedic Dermatology – Dr. P. M. Madhu
6. Gulmam - Dr. P. M. Madhu
7. Nirnaya – Manual of Clinical examinations in Ayurveda - Dr. P. M. Madhu
8. Rasayana and Vajikarana – Rejuvenation and Virile Therapy – Dr. Giri. P. V
9. Raktapitta and its treatments - Abhilash M
10. Aavaranam - Abhilash M, Lakshmi V,
11. Myopathy - An Ayurvedic Perspective - Abhilash M

#### **2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

#### **2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

#### **2.13 Records**

Relevant records are to be maintained

#### **2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.
3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.
4. For approving the title a scrutiny Committee shall be constituted by the University.

5. The University should display the approved synopsis of dissertation on their website.
6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.
7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.
9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.
10. The dissertation shall consists critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.
11. The dissertation shall consist of not less than forty thousand words.
12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.
13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.
14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.
15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.
16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.
17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.
18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

**2.20 Journals**

**Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906

34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamy@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in/Open Access Peer Reviewed E-Journal*. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

## **3. EXAMINATIONS**

### **3.1 Eligibility to appear for examinations [including Supplementary]**

A. Preliminary examination:

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

B. Final examination:

For appearing final year examination 80 % attendance in each theory and practical subjects in 2 nd & 3 rd years separately is required

### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

**Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

**Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

**SCHEDULE OF EXAMINATIONS**

- a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.
- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

**CONDUCT OF EXAMINATION**

1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.

3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

#### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.

The pattern is long essay for 20 marks -one question

Short essay 10 marks - Eight questions

Total 9 questions for 100 marks

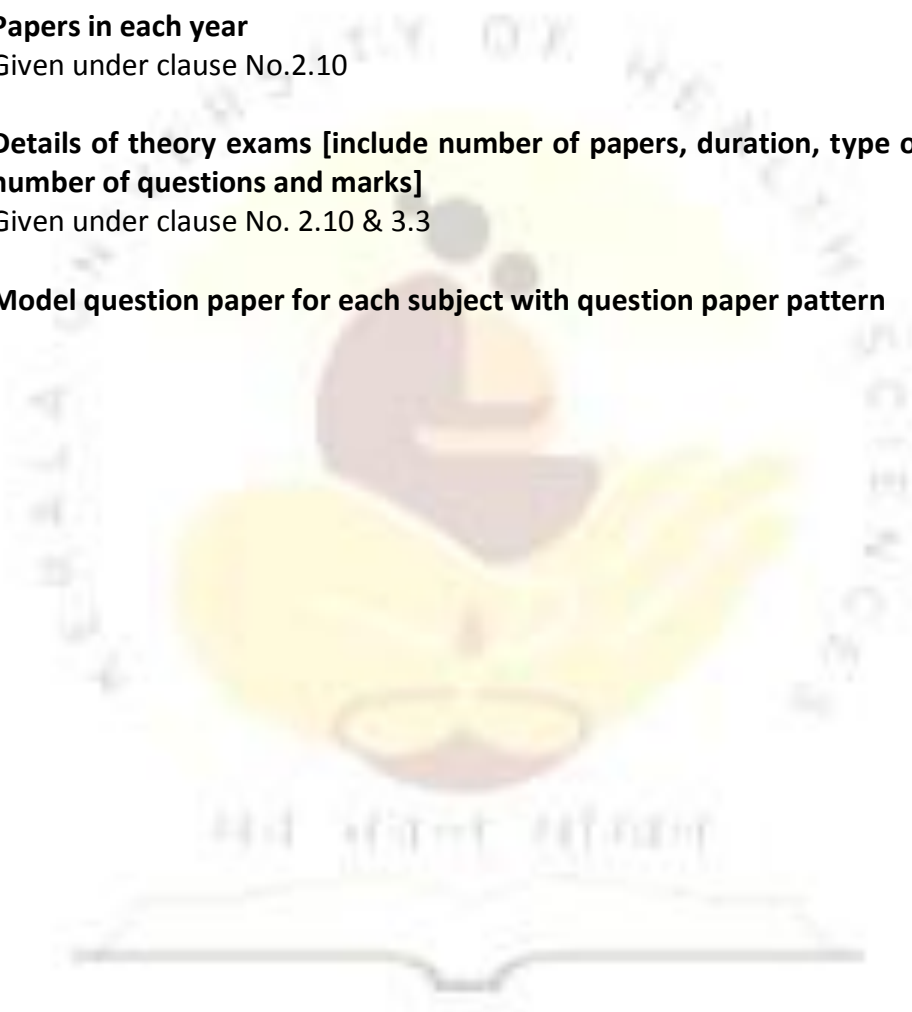
#### **3.4 Papers in each year**

Given under clause No.2.10

#### **3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

#### **3.6 Model question paper for each subject with question paper pattern**



QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Kayachikitsa)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain srotopareeksha in comparison with systemic Examination-20 marks

**Short Essays**

**(8x10=80)**

2. Explain the role of Dasavidhapareeksha in the diagnosis and management of disease
3. Explain Rogamarga and write down its prognostic and therapeutic importance
4. Write the role of rasayana in clinical immunology
5. Write the emergency management of water-electrolyte Balance.
6. Write Briefly on X-Ray and explain its importance in the diagnosis of respiratory diseases
7. Explain CPR
8. Explain Vyadhikshamata and write its role in the pathogenesis and management of diseases
9. Explain dasavidha langhana and its application in various diseases

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kayachikitsa)  
(..... scheme)**

**Paper I – Fundamentals of Kayachikitsa**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Discuss the role of Ashtavidha Pareeksha in contemporary Ayurvedic clinical Examination.

**Short Essays**

**(8x10 = 80)**

2. Explain the role of Spirometry in COPD assessment.
3. Discuss the multidimensional utility of Rasayana therapy.
4. Explain the importance of Nidanaparivarjana in Roga chikitsa.
5. How and why medical ethics be preserved in clinical practice.
6. Discuss how Ayurveda can be helpful in National Tuberculosis Control Programme.
7. Compare the tapping methodology adopted in Modern and Ayurvedic therapy.
8. Discuss the relevance of Clinical dietetics in disease management.
9. Write any two possible Iatrogenic disorders in Modern and Ayurvedic medical fields and discuss the possible methods to prevent them.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kayachikitsa)  
(..... scheme)**

**Paper II – Samanya Roga Chikitsa**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the various investigations helpful in the diagnosis and assessment of Pulmonary Tuberculosis. Discuss its samprapthi and chikitsa tatva in Ayurveda.

**Short Essays**

**(8x10 = 80)**

2. Explain swarabheda in modern perspective. Write the management protocol.
3. Write a short note on Idiopathic Thrombocytic Purpura (ITP) and its possible Ayurvedic management.
4. Discuss the differential diagnosis and Ayurvedic management of GERD and Angina.
5. Discuss the management of Sopha in light of different organ systems involved.
6. Explain how Krimi chikitsa can be adopted in Intestinal worm Infestations.
7. Write the classification of Eczema. Discuss its Ayurvedic samprapthi and management protocol.
8. Discuss the Ayurvedic management for Osteoporosis and Explain the modern evaluation techniques used.
9. Give details on the management of Krisa Pramehi.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kayachikitsa)  
(..... scheme)**

**Paper III – Vishishta Roga Chikitsa**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the samprapthi and possible Ayurvedic management protocol for various movement disorders.

**Short Essays**

**(8x10 = 80)**

2. Discuss the Samprapthi of Demyelinating disorders. Write the Ayurvedic management.
3. Explain the role of Ayurveda in the management of Rabies.
4. Discuss the influence of environmental factors in the pathogenesis and management of a disease.
5. Discuss how Ayurveda can be a helping hand in Cancer Care.
6. Explain Ayurvedic management for SLE in terms of Samprapthi vighatana.
7. Discuss the understanding of common thyroid disorders in Ayurvedic view with its line of management.
8. Explain how Unmada chikitsa is adopted in the management of Schizophrenia.
9. Compare the modern and Ayurvedic view on Lumbago Sciatica Syndrome with its general management principles.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Kayachikitsa)  
(..... scheme)**

**Paper IV – Advances in Kayachikitsa**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Discuss the need to constitute a well designed patient care system in Ayurveda.  
Write the steps to be taken for its planning and implementation.

**Short Essays**

**(8x10 = 80)**

2. Discuss the scope of collaborative research in the area of Life style disorders.
3. Explain the role of Ayurvedic medicines in Immune protection.
4. Explain how Ayurvedic management is helpful in Geriatric care.
5. Discuss the possible advances in Ayurvedic management for male infertility.
6. Explain the role of Physical medication and rehabilitation in Neuro degenerative disorders.
7. Discuss the role of 'AYUSH' in community health care system.
8. Explain the steps taken to manage a sudden outbreak of Dengue fever in Kottayam, Kerala.
9. Discuss the possibility of Rasayanas in Neuro-Psychiatric disorders.

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

### **3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

### **4. INTERNSHIP**

Not applicable

### **5. ANNEXURES**

#### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised

University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study

7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman

8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.
12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

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## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Vachaspati – Panchakarma  
(M.D. (Ayurveda) - Panchakarma)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Vachaspati – Panchakarma (M.D. (Ayurveda) – Panchakarma)

### 2.2 Objectives:

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

## 2.9 Teaching learning methods

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## 2.10 Content of each subject in each year

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**

**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
- 5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati  
Aushadhi-yog Parikshana Paddhati  
Swastha, Atura Pariksha Paddhati  
Dashvidha Parikshya Bhava  
Tadvidya sambhasha, vadmarga and tantrayukti
- 6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**
- 7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

  - a. Panchamahabhuta and tridosha.
  - b. Concepts of rasa, guna, virya, vipak, prabhav and karma
  - c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.
- 8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.
- 9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
- 10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**
- 11. Introduction to latest Trends in Drug Discovery and Drug Development**
  - Brief information on the traditional drug discovery process
  - Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
  - Brief introduction to the process of Drug development.
- 12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies

Randomized Controlled Trials (RCT) & their types

Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies –

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
National Pharmacovigilance Programme for ASU drugs.
14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

1. Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
2. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
3. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
4. Measures of Central tendency – Mean, Median and Mode.
5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
6. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
7. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
8. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete

**9. Measures of Central tendency – Mean, Median and Mode.**

**10. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation**

**11. Non parametric methods: Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)**

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.  
Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:**  
Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography: computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics**

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

**PRACTICAL**

**100 Marks**

**Teaching hours – 120**

**I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and

	toxicology
5	Biochemistry (Clinical) Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
6	Clinical Pathology Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
7	Imaging Sciences Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
8	Clinical protocol development

## II. MEDICAL STATISTICS

**Practical hours - 20**

**Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.**

**Records to be prepared.**

**Distribution of marks (Practical):**

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

1. Aushotosh Kar "Pharmacognos & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
4. Kokate, CK., Purohit, AP, Gokhale, SB (2010). Pharmacognosy. Nirali Prakashan. Pune.
5. Kokate, CK., Khandelwal and Gokhale, SB (1996). Practical Pharmacognosy. Nirali Prakashan. Pune.

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7. Tyler V C., Brady, L R., and Robers J E., Pharmacognosy, Lea and Febiger, Philadelphia.
8. Tyler VE Jr and Schwarting AE., Experimental Pharmacognosy, Burgess Pub. Co, Minneapolis, Minnesota.
9. Wallis- TE (2011)- reprint. Practical Pharmacognosy (Fourth Edition) Pharma Med Press, Hyderabad.
10. Wallis T E, Analytical Microscopy, J & A Churchill limited, London.
11. Wallis T E., Text Book of Pharmacognosy, J & A Churchill Limited, London.
12. WHO guidelines on good agricultural and collection practices- (GACP) for medicinal plants (2003).World Health Organization- Geneva.
13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1 to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
2. Brain, KR and Turner, TD. (1975). The Practical Evaluation Phytopharmaceuticals. Wright Sciencetechnica, Bristol.
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4. Harborne, JB (1973). Phytochemistry Methods. Chapman and Hall, International Edition, London.
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7. Khopkar, S. M. Analytical Chemistry, New Age International Publishers , 3 rd edition
8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
9. Mahadik KR, Bothara K G. Principles of Chromatography by, 1st edition, Nirali Prakashan.
10. Qadry JS and Qadry S Z., Text book of Inorganic Pharmaceutical and Medicinal Chemistry, B. S. Shah Prakashan, Ahmedabad.
11. Quality Control Methods for Medicinal Plant Material. Reprint (2002). WHO Geneva.
12. Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
15. Stahl E., Thin Layer Chromatography - A Laboratory Handbook, Springer Verlag, Berlin.

16. Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo and Dev Dutt Rakesh (2008). Extraction Technologies for Medicinal and Aromatic Plants INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste

### **Biochemistry and Laboratory techniques:**

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
3. David Frifelder. W. H. Freeman. (1982). Physical Biochemistry by; 2 edition
4. David Sultan (2003). Text book of Radiology and Imaging, Vol-1, 7th Edition.
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6. Harold Varley. Practical Clinical Bio-chemistry
7. Kanai L.Mukherjee. Clinical Pathology:, Medical Laboratory Technology Vol. I.Tata McGrawHill 1996, New Delhi.
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12. Zubay, G.L. Biochemistry, W.M.C. Brown Publishers, New York 1998.
13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
3. Altick and Fenstermaker. (2007). *The Art of Literary Research*. 4th ed. W. W. Norton. Castle, Gregory. *Blackwell Guide to Literary Theory*. Blackwells,
4. Bowling, A. (2002). Research Methods in Health (2nd ed). Buckingham: Open University Press.
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11. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
12. Relevant portions of Ayurvedic Samhitas and other texts

### **Drug research and development:**

1. RICK NG, (2009). DRUGS-from discovery to approval. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
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5. Natural products isolation. (2006) 2nd ed. / edited by Satyajit D. Sarker, Zahid Latif, Alexander I. Gray. (Methods in biotechnology; 20). Includes bibliographical references and index. Humana Press Inc. ISBN 1-58829-447-1 (acid-free paper) – ISBN 1-59259-955-9 (eISBN)
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7. OECD (2000) Guidance Document on Acute Oral Toxicity. Environmental Health and Safety Monograph Series on Testing and Assessment No 24.
8. OECD Guideline for the Testing of Chemicals – Repeated Dose 90-day Oral Toxicity Study in Rodents, 408, 1998.  
<http://browse.oecdbookshop.org/oecd/pdfs/free/9740801e.pdf>(latest version)
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13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
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### **Biotechnology and Bio-informatics:**

1. Angela M. Meireles A (2009). Extracting Bioactive compounds for food products. Theory and applications. CRC- Press Taylor and Francis Group.
2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978- 81-8318-831-9
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9. <http://www.dsir.nic.in/reports/tifp/database/metallo.pdf>.
10. [www.consort-statement.org](http://www.consort-statement.org)
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### **Clinical Evaluation:**

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### **Medical Statistics:**

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- Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
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  13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
  14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
  15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana - A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.D.-AYURVEDA PRELIMINARY**

#### **PANCHAKARMA** **(Panchakarma)**

**PAPER - II**                      **Theory -100 Marks**  
**Practical and Viva Voce– 100 Marks**

**PART A**                                      **50 Marks**

1. Chikitsa and its classifications; Antah-Parimarjana and Bahir-Parimarjana Chikitsa
2. Principles of Chikitsa, Kriyakal, Shadvidha and Dvidha Upakrama and role of Panchakarma therein.
3. Applied aspects of Trividha, Shadvidha, Ashta Vidha and Dasha Vidha Pariksha.
4. Applied anatomy and physiology of cortex, cranial and peripheral nerves. Methods of physical examinations of central nervous system: sensory system, motor examination- muscle power and tone, superficial and deep reflexes, difference of upper and lower motor neuron lesions. Tremors and coordination.
5. Functions of various single muscles and groups of muscles, applied anatomy and physiology of joints. Methods of examination of locomotor system. Differential diagnosis of Amavata (rheumatoid arthritis), Vatarakta (gout) and Sandhivata (osteoarthritis). Examination of lumbar and cervical disorders including Gridhrasi (sciatica) and Vishvachi (Brachial neuralgia).

6. Applied anatomy and physiology of cardiovascular and respiratory systems, functions of capillaries and its permeability. Methods of examination of respiratory and cardiovascular system. Interpretation of spirometry and ECG findings.
7. Knowledge and method of examination of various skin lesions.
8. Applied anatomy of stomach, small intestine and large intestine. Detailed examination of gastro-intestinal system.

### **PART B**

**50 Marks**

1. Definition of Karma. Trividha Karma for Shodhana.
2. Importance of Panchakarma in health and disease.
3. Indications and contraindications for Shodhana. Applied aspects of Koshta and Agni.
4. Importance of Purva and Pashchata Karma in Shodhana. Parihara Vishaya for Panchakarma.
5. Samsarjana Karma. General knowledge of various Aushadha and Ahara Kalpana used for Panchakarma.
6. Areas of research in Panchkarma.
7. Knowledge of equipments and instruments used in Panchkarma in ancient times and the possible modifications therein now.
8. Knowledge of quality standards of NABH (National Accreditation Board of Hospitals for Ayurveda, guidelines for establishment and management of eco-friendly Panchkarma theatre including management of biomedical waste.

### **PRACTICAL**

**100 Marks**

1. Duty in Panchakarma ward and theatre.
2. Performance of 5 Cases each of Snehana, Svedana, Vamana, Virechana, Basti and Nasya with maintaining of detailed record.
3. Record of detailed examination of 25 patients treated with Panchakarma and effects observed thereon

#### **Distribution of Marks:**

1. Case Records of 25 Patients in detail	- 20 Marks
2. Performance of Long Karma	- 20 Marks
3. Performance of Short Karma	- 10 Marks
4. Panchakarma Procedures	- 15 Marks
5. Instruments and spotting	- 15 Marks
6. Viva-voce	- 20 Marks
<b>Total</b>	<b>- 100 Marks</b>

#### **Reference Books:-**

1. Charak Samhita with commentary of Ayurved Dipika by Chakrapanidatta and Jalpakalpa taruby Gangadhara
2. Sushruta Samhita with the Nibhandha Samgraha commentary of Dalhana and Nyayachandrika panjika of Gayadasa on nidansthana
3. Ashtang Hridaya with Sarvanga sundara and Ayurved rasayana commentaries
4. Ashtanga Sangraha with Shashilekha commentery
5. Bhela Samhita
6. Kashyapa Samhita

7. Bhavaprakasha of Bhavamishra
8. Sharangadhara Samhita
9. Vangasen
10. Gadanigraha
11. Ayurvediya Panchkarma chikitsa Dr Mukundilal Dwivedi
12. Panchkarma Vigyan Dr Haridas Shreedhar Kasture
13. Illustrated Panchkarma Dr.G Srinivasa Acharya
14. Ayurveda-Principles and Practice of Panchakarma Dr. Mandip and Dr Gurdip Singh
15. The Panchkarma Treatment of Ayurved With Kerala Specialities Dr. T.L. Devaraj
16. Panchkarma Therapy Dr. R.H. Singh
17. Principles and practice of vasti Dr. Vasudevan Nampoothiri and Dr. L. Mahadevan
18. Claiton's Physiotherapy
19. Teddy's Physiotherapy
20. Guyton's Physiology
21. Harrison's Principles of Internal Medicines

#### **Additional Books for Reference**

1. Standard Operative Procedure of Panchakarma - Dr. A. K. Manoj kumar
2. Kriyakramangalude Prayoga Samuchayam – Dr. P. Gourisankar

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### **M.D.- AYURVEDA FINAL YEAR**

#### **PANCHAKARMA (Panchakarma)**

#### **PAPER - I**

#### **Purva Karma-Snehana and Svedana**

**100 Marks**

1. Panchkarma in Ashtanga Ayurved and Significance of Shodhana
2. Ama and Shodhana, benefits of Shodhana, Samikshya Bhavas in Shodhana,
3. Importance of Pachana prior to Snehana, methods, drugs, duration and dose for Pachana, samyak Lakshana of Pachana

#### **Snehana**

1. Etymology and definition of Sneha and Snehana
2. General considerations about Snehana
3. Classifications of Sneha, Sneha-Yoni, detailed knowledge of four types main Sneha-Ghrita, Taila, Vasa and Majja with their characteristics, importance and utility, various aspects of Uttama Sneha
4. Properties of Snehana Dravya and their interpretation
5. Effects of Snehana
6. Sneha Kalpana, various types of Sneha Paka with their utility
7. Indications and contraindications of Snehana
8. Classification of Snehana: Bahya and Abhyantara Snehana
9. Bahya Snehana and Bahir-Parimarjana, utility and importance of Bahya Snehana

#### 10. Classification of Bahya Snehana

Methods, indications, contraindications, specific utility of the followings Abhyanga, Mardana, unmardana, Padaghta, Samvahana, Udvartana/Utsadana, Udgharshana, Avagaha, Pariseka, Lepa, Pralepa, updeha, Gandusha, Kavala; Karana and Nasa Purna, Akshi Tarpana; Murdhni Taila: Shiro-abhyanga, Shirodhara, Siro Pichu and Siro Basti, Shiro Lepa (Talapotichil), Talam and Takradhara, etc.

11. Knowledge of digestion and metabolism of fat

12. Karmukata of Abhyantara and Bahya Snehan

13. Knowledge of different western massage techniques

14. Abhyantara Snehana: Brimhnartha, Shamanartha and Shodhanartha, definition, method and utility of Brimhanartha and shamanrtha Snehana; difference between Shamanartha and Shodhanartha Snehana

15. Methods of Abhyantar Snehana

16. Shodhanartha Snehana: Acchapana and Vicharana, Utility and various methods of Sadyasnehana, Avapidaka Sneha

17. Matra of Sneha : Hrasiyasi, Hrasva, Madhyama and Uttma Matra with their indications, specific utility of Ghrita, taila, Vasa and majja; Anupana of Sneha

18. Need and method of Rukshana before performing Snehana in specific conditions and Samyak Rukshana Lakshana

19. Shodhannga Snehana Vidhi and methods of fixation of dose

20. Diet and Pathya during Snehana

21. Observation of sneha Jiryamana, Jirna and Ajirna Lkashana

22. Samyak, Asnigdha and Ati Yoga Lakshana of Snehana

23. Snehs vyapta and their management

24. Pariharya vishaya and Parihara Kala

#### **Svedana**

1. Etymology and definition of Svedana

2. General considerations about Svedana

3. Properties of Svedan and Svedopaga Dravya

4. Indications and contraindications of Svedana

5. Various Classifications of Sveda and Svedna

6. Detailed knowledge of four types of Sveda of Sushruta with their utility;

7. Hina, Mridu, Madhya and Mhana Sveda; Ekanga and Sarvanga sveda with their utility

8. Utility and method of each of 13 types of Sagni and 10 types of Niragni Sveda

9. Shodhannga and Samshamaniya Sveda

10. Methods to protect the vital organs (varjya anga) during Svedan Procedure

11. Detailed Knowledge about Utility of below mentioned Svedan procedures:- Patrapinda Sveda, Shashtika Shalipinda Sveda, Churna Pinda Sveda, Jambira Pinda Sveda, Dhanya Pinda Sveda, Kukkutanda Sveda, Anna lepa, Valuka Sveda, Ishtika Sveda, Nadi Sveda, Bashpa Sveda, Kshira bashpa Sveda, Avagaha Sveda, Parisheka Sveda, Pizichil, Dhanyamla Dhara, Kashaya Dhara, Kshira Dhara and Upanaha Sveda.

12. Avasthanusari Svedana in various disorders

13. Samyak, Ayoga and Atiyoga Lakshana, Sveda Vyapat and their management

14. Diet and regimens during and after Svedana

15. Karmukata of Svedana

16. Current sudation modalities like Sauna bath, Steam Bath, Infrared, etc.

17. Svedana with Kati Basti, Janu Basti and Griva Basti
18. Study of Snehana and Svedana related portions in classics with commentaries

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**PAPER – II**

**Vamana and Virechana Karma**

**100 Marks**

**Vamana Karma**

1. Etymology, definition and general considerations of vamana
2. Properties of Vamaka and Vamanopaga drugs
3. Knowledge and utility of important Vamaka drugs and their preparations (Vamana Yoga)
4. Avasthanusara Vamana and its utility.
5. Indications of Vamana
6. Contraindications of Vamana with reasons
7. Pachana prior to Snehana
8. Detailed knowledge and method of preparation of patient with Snehana
9. Abhyanga and Svedana as Purvakarma of Vamana
10. Diet and management of gap day
11. Need of increasing of Kapha for proper Vamana, Kapha increasing diet
12. Management of Patients on the morning of Vamana
13. Administration of food articles prior to Vamana
14. Drug, time, Anupana, Sahapana, dose and method of administration of Vamana and Vamanopaga preparations
15. Method of Vamana Karma, waiting period for automatic Vamana Vega and manipulation in its absence
16. Observations prior to beginning of Vamana such as sweat on forehead, horripilation, fullness of stomach and nausea
17. Observation and assistance of the patient during Vamana
18. Vega and Upavega of Vamaana and its counting, observations and preservation of vomitus matter and its weighing
19. Samyak, Ayoga and Atiyoga of Vamana
20. Laingiki, Vaigiki, Manaki and Antiki Shuddhi,
21. Hina, Madhya and Pravara Shddhi and Samsajana Krama accordingly
22. Detail knowledge of methods of Samsarjana Krama and its importance
23. Kavala and Dhumapana after vamana
24. Management of Ayoga, Atiyog and Vyapat of Vamana with Ayurveda and modern drugs
25. Parihara Vishaya and Kala for Vamana
26. Vamana Karmukata with Pharmacodynamics of Vamana

**Virechana Karma**

1. Etymology, definition and general considerations of Virechana
2. Importance of Vamana and Virechana as shodhana, Virechana better than Vamana
3. Necessity of Vamana prior to Virechana
4. Preparation of patients for Virechana after Vamana
5. Preparation of patients directly for Virechana
6. Properties of main Virechaka and Virechanopaga drugs, Classifications of Virechana drugs with definition, example and utility of each type

7. Indications of Vamana Karma
8. Contraindications of Virechana with reasons
9. Utility of Virechana for the specific conditions and stages of the disease
10. Internal Snehana for Virechana with diet
11. Management of 3 gap day with diet and importance of low Kapha for proper Virechana
12. Abhyanga and Svednana as Purvakarma of Virechana
13. Management of Patients on the morning of Virechana
14. Virechana should be performed in empty stomach
15. Drug, dose, time, Anupana, sahapana and method of administration of Virechana and Virechanopaga preparations
16. Method of performing of Virechana Karma
17. Observations during Virechana, Vega and Upavega of Virechana and its counting, observations and preservation of feces and its weighing
18. Samyak, Ayoga and Atiyoga of Virechana
19. Laingiki, Vaigiki, Manaki and Antiki Shuddhi of Virechana
20. Hina, Madhya and Pravara Shddhi and Samsajana Krama accordingly
21. Detail knowledge of methods of Samsarjana Krama and its importance, and Tarpana krama and its importance
22. Management of Ayoga, Atiyog and Vyapat of Virechana with Ayurveda and modern drugs
23. Parihara Vishaya and Kala for Virechana
24. Virechana a Karmukata with Pharmacodynamics of Virechana
25. Applied anatomy and physiology of Gastrointestinal system related with Vamana and Virechana
26. Study of Vamana and Virechana related portions in classics with commentaries
27. Recent advances of researches on the effect of Vamana and Virechana
28. Scope of research for Vamana and Virechana.
29. Role of Vamana and virechana in promotion of health prevention and treatment of diseases

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### **PAPER - III**

### **Basti Karma and Nasya Karma**

**100 Marks**

#### **Basti Karma**

1. Etymology, definition and general considerations of Basti
2. Importance of Basti in Kayachikitsa and other branches of Ayurveda
3. Classifications of Basti
4. Drugs useful in Basti
5. Indications of Basti, its role at the various stages of diseases
6. Contraindications of Basti with reasons
7. Description of Basti yantras, Basti netra and Basti putaka and their Doshas. Modified Basti Yantra, their merits and demerits
8. Dose schedules of Niruha and Anuvasana basti

**Niruha basti** Etymology, synonyms, definition and classifications and subclassifications of Niruha Basti and detailed knowledge of each type of Niruha Basti along with indications and

contraindications and benefits Contents of various types of Niruha Basti, their proportions, methods of mixing basti Dravya, Relation of Virechana, Shodhana, Anuvasana Basti with Niruha Basti Purvakarma for Niruha Basti; Pathya before, during and after Niruha Basti; all the aspects of administration of various Niruha Basti Observations during and after Niruha Basti Basti Pratyagamana, Samyakyoga, Ayoga and Atiyoga Lakshana and Various Vyapat of Niruha Basti and their management according to Ayurved and Modern Systems of Medicines Management during and after Niruha Basti Pariharya vishaya and pariharakala, **Anuvasana basti** Etymology, synonyms, definition and classifications of Anuvasana Basti and detailed knowledge of each type of Anuvasana Basti along with indications and contraindications and benefits Various types of Ghrita and Taila useful in Anuvasana Basti; Anuvasana Basti with Vasa and Majja along with their merits and demerits Relation of Virechana, Shodhana, Niruha Basti, Snehana with Anuvasana Basti Purvakarma for Anuvasana Basti; Pathya before, during and after Anuvasana Basti; all the aspects of administration of Anuvasana Basti including Kala Observations during and after Anuvasana Basti Anuvasana Basti Pratyagamana, Samyakyoga, Ayoga and Atiyoga Lakshana and Various Vyapat of Anuvasana Basti and their management. Management during and after Anuvasana Basti Pariharya vishaya, Pathya and pariharakala for Anuvasana Various combined basti schedules such as Karma, Kala, yoga Basti etc. Detailed knowledge of Matra Basti Detailed Knowledge of different basti formulations like Piccha Basti, Kshira Basti, Yavana Basti, Madhutailika Basti, Erandamuladi Niruha Basti, Panchaprasrutika Basti, Kshara Basti, Vaitarana Basti, Krimighna Basti, Lekhana Basti, Vrishya Basti, Manjishtadi Niruha Basti, Dashamula Basti, Ardhamatrika Basti, Sarva roghara Niruha Basti, Brimhana Basti, Vataghna Basti, Pittaghna Basti and Kaphaghna Basti etc, and their practical utility.

### **Uttara basti**

1. Definition and Classification of Uttara Basti, its Netra and Putaka. Dose of Uttara Basti Sneha and Kashaya Basti. Different Uttara Basti Kalpanas in various diseases.
2. Detailed knowledge of Purvakarma and Administration of Uttara Basti in male and female, precautions, aseptic measures, complications and their management
3. Karmukata of Basti. Applied anatomy and physiology of colon, Pharmacodynamics of Basti.
3. Concept of 'Gut Brain' and its relevance to Basti Therapy.
4. Study of relevant portions of Basti in classics with commentaries.

### **Nasya Karma**

1. Etymology, synonyms, importance and definition of Nasya
2. Nasya drugs according to various Samhita
3. Classifications and sub-classifications of Nasya with detailed knowledge of each type
4. Indications and contraindications of each type of Nasya with reasons
5. Drugs useful for Nasya with Dose and methods of preparations and their doses
6. Nasya Kala and Pathya before, during and after Nasya; Duration of different Nasyas
7. Purvakarma of each types of Nasya
8. Detailed knowledge of administration of each type of Nasya with management during and after Nasya.
9. Detailed knowledge of common Nasya formulations such as Shadabindu Taila, Anu taila, Kshirabala Taila, Karpasastyadi Taila, Bramhi Ghrita.
10. Samyak yoga, Ayoga and Atiyoga of each types of Nasya, its Vyapat and their management

11. Pashchata Karma; Role of Dhumapana, Kavala after Nasya,
12. Diet and Pathya before, during and after Nasya Karma
13. Pariharya vishaya, Parihara Kala,
14. Nasya Karmukata, Applied anatomy and physiology related to Nasa hi Sirso Dvaram, blood and nerve supply to nose, Shringataka marma, olfactory nerve and centers, aroma therapy, trans nasal administration of drug, recent advances in nasal drug delivery
15. Study of relevant portion in classics with commentaries

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#### **PAPER – IV      Raktamokshana, Physiotherapy and Disease wise Panchakarma    100 Marks**

##### **A. Raktamokshana-33 Marks**

1. Definition, importance, classifications and detailed knowledge of each type of Raktamokshana with their methods of performance
2. General principles, indications, contraindications of Raktamokshana
3. Detailed knowledge of Jalaukavacharana: Indications and contraindications of Jalaukavacharana, various types of Jalauka with their beneficial and harmful effects.
4. Purvakarma and method of Jalaukavacharana, observations and Pathya before, during and after Jalaukavacharana
5. Management during and after Jalaukavacharana
6. Symptoms of Samyak, Ayoga and Atiyoga and Vyapat of Raktamokshana and their management with Ayurveda and Modern medicines.
7. Pariharya vishaya and Parihara kala
8. Karmukata of different types of Raktamokshana

##### **B. Clinical Physical Medicine-33 Marks**

1. Definitions and terminology
2. Biomechanics of human movements; Physiology of exercise
3. Treatment modalities used in Physical Medicine- general properties and detailed clinical use of each
  - a. Heat – general physiological properties and mode of action as a treatment agent, Forms of heat therapy – superficial and deep heating. General knowledge of Infrared, Paraffin Wax bath, short wave diathermy, electro magnetic therapy, ultra sound therapy, convection heating devices,
  - b. Cold as a therapeutic agent
  - c. Prescription of physical modalities and their applications in medicine.
4. Clinical use of massage, manipulation, stretching
5. Principles of occupational therapy, training in activities of daily living for rehabilitation, self-help devices (walking aids, wheelchairs, tricycles & modified vehicles), instrumental activities of daily living,
6. Physiotherapy exercises for Paralytical disorders, cervical spondylosis, frozen shoulder and slip disc.

##### **C. Disease-wise Panchakarma-34 Marks**

Role of Panchakarma in Different Stages of the following Diseases:

Jvara, Raktapitta, Madhumeha, Kushtha, Shvitra, Unmada, Apasmara, Shotha, Plihodara, Yakridaluodara, jalodara,, Arsha, Grahani, Kasa,Tamaka Shwasa, Vatarakta, Vatavyadhi,

Amlapitta, Parinama Shula, Ardhavabhedaka, Ananta Vata,, Amavata, Sheetapitta, Shleepada, Mutrakruchchra, Mutrashmari, Mutraghata, Hrudroga, Pinasa, Drushtimandya, Pandu, Kamala, Sthaulya, Krimi, Madatyaya, Moorchcha, Padadari, Mukhadushika, Khalitya, Palitya, Use of Various panchakarma Procedures in the following disorders - Migraine, Parkinson's Disease, trigeminal neuralgia, Bell's palsy, cerebral palsy, Muscular dystrophy, hemiplegia, paraplegia, Lumbar Disc disorders, Spondylolisthesis, Ankylosing spondylosis, Carpel Tunnel Syndrome, Calcaneal Spur, Plantar fascitis, GB syndrome, Alzhiemer's disease, Irritable Bowel Syndrome, ulcerative colitis, psoriasis, hypothyroidism, hyperthyroidism, hypertension, allergic rhinitis, , Eczema, diabetes mellitus, Chronic obstructive pulmonary Disease, Insomnia, Rheumatoid Arthritis, Gout, Osteoarthritis,multiple sclerosis, SLE, male & female infertility, cirrhosis of liver, Jaundice, General Anxiety Disorders.

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#### Pattern of practical examination

1. Long Case	: 20 marks
2. Practical	: 25 Marks
3. Spotting	: 10 Marks
4. Dissertation Presentation	: 05 Marks
5. Teaching Communication Skill	: 05 Marks.
6. Record	: 10 Marks
7. Viva	: 25 Marks.
<b>Total</b>	<b>: 100 Marks</b>

#### REFERENCE BOOKS:

1. Charak Samhita with commentary of Ayurved Dipika - Agnivesha  
by Chakrapanidatta and Jalpakalpa taruby Gangadhara
2. Sushrutha Samhita with the Nibhandha Samgraha - Sushrutha  
commentary of Dalhana and Nyayachandrika panjika  
of Gayadasa on nidansthana
3. Ashtang Hridaya with Sarvanga sundara and Ayurved - Vagbhata Vagbhata  
rasayana commentaries Ashtanga Sangraha with Shashilekha  
commentery Bhela Samhita Kashyapa Samhita Bhavaprakasha  
of Bhavamishra Sharangadhara Samhita Vangasen Gadanigraha
4. Ayurvediya Panchkarma chikitsa - Dr Mukundilal Dwivedi
5. Panchkarma Vigyan - Dr Haridas Shreedhar  
Kasture
6. Illustrated Panchkarma - Dr.G Srinivasa Acharya
7. Ayurveda-Principles and Practice of Panchakarma - Dr. Mandip and  
Dr. Gurdip Singh
8. The Panchkarma Treatment of Ayurved with Kerala Specialities - Dr. T.L. Devaraj
9. Panchkarma Therapy - Dr. R.H. Singh
10. Principles and practice of vasti - Dr. Vasudevan  
Nampoothiri and Dr. L.  
Mahadevan

11. Claiton's Physiotherapy
12. Teddy's Physiotherapy
13. Harrison's Principles of Internal Medicines
14. Guyton's Physiology

#### **Additional Books for Reference**

1. Standard Operative Procedure of Panchakarma - Dr. A. K. Manoj kumar
2. Kriyakramangalude Prayoga Samuchayam – Dr. P. Gourisankar

#### **2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

#### **2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

#### **2.13 Records**

Relevant records are to be maintained

#### **2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.
3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.
4. For approving the title a scrutiny Committee shall be constituted by the University.
5. The University should display the approved synopsis of dissertation on their website.
6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.
7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.
9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.

10. The dissertation shall consist critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.

11. The dissertation shall consist of not less than forty thousand words.

12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.

13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.

14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.

15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.

16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.

17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.

18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

**2.20 Journals**

**Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478

4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamy@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

#### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708

8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in*/Open Access Peer Reviewed E-Journal. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

## **3. EXAMINATIONS**

### **3.1 Eligibility to appear for examinations [including Supplementary]**

A. Preliminary examination:

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

B. Final examination:

For appearing final year examination 80 % attendance in each theory and practical subjects in 2<sup>nd</sup> & 3<sup>rd</sup> years separately is required

### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

#### **Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

#### **Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

### **SCHEDULE OF EXAMINATIONS**

- a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.
- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

### **CONDUCT OF EXAMINATION**

1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.
3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.

The pattern is long essay for 20 marks -one question

Short essay 10 marks - Eight questions

Total 9 questions for 100 marks

### **3.4 Papers in each year**

Given under clause No.2.10

**3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

**3.6 Model question paper for each subject with question paper pattern**

**QP CODE: .....**

**Register No.....**

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Panchakarma)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the applied aspects of Trividha, Shadvidha, Ashta Vidha and Dasha Vidha Pariksha

**Short Essays**

**(8x10=80)**

2. How to establish and manage an eco-friendly Panchakarma theatre?
3. Explain the role of various Aushadha Kalpana in Panchakarma
4. Explain the role of gastro-intestinal tract in Virechana karma
5. Principles of Shadvidha Upakrama and role of Panchakarma therein.
6. Explain the methods of examination of locomotor system.
7. Explain the methods of biomedical waste management in Panchakarma theatre
8. Explain the need and significance of Parihara Vishaya for Panchakarma
9. State the indications and contraindications for Shodhana in general

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Panchakarma)  
(..... scheme)**

**Paper I – Purva Karma-Snehana and Svedana**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe the poorva, pradhana and paschat karma of Shodhanartha snehapana in a 35 year old lady with psoriasis.

**Short Essays**

**(8x10 = 80)**

2. Explain the benefits of Shodhana in swastha and Atura
3. Explain the methods, drugs, duration, dose and samyak lakshana of Rookshana prior to Snehapana
4. Define Dhara sveda with types and their indications. Explain the procedure of Kayaseka (Pizichil)
5. Explain Karmukata of Svedana
6. List five indications and contraindications each for Svedanan with proper justification
7. Write the sneha vyapat and their management according to Ayurveda and Modern systems of medicine.
8. Write Jiryamana, Jirna and Ajirna Lakshana during snehapana
9. Explain the specific diet and regimens during and after Svedana

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Panchakarma)  
(..... scheme)**

**Paper II – Vamana and Virechana Karma**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the pharmaco-dynamics of vamana and virechana according to Ayurveda and Modern systems of medicine

**Short Essays**

**(8x10 = 80)**

2. Enumerate vyapat of virechana and explain the patho-physiology of atiyoga-janya vyapat
3. Write about the procurement and preservation of madanaphala
4. Write five kalpa-sthana uktha virechana yoga and their indications
5. Explain the concept of avasthanusara vamana
6. Explain laingiki-sudhi of virechana according to Charaka and Sushruta samhita
7. List ten contra-indications of vamana with reasoning
8. Comment on the classification of virechana-dravya according to Sharngadhara
9. Explain the procedure of vamana karma

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Panchakarma)  
(..... scheme)**

**Paper III – Basti Karma and Nasya Karma**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain various Vyapat of Niruha Basti and their management according to Ayurved and Modern Systems of Medicines

**Short Essays**

**(8x10 = 80)**

2. Explain the method of administration of utara Basti in female along with precautions and aseptic measures
3. List the contraindications of nasya with proper reasons
4. Explain Pariharya vishaya, Pathya and Pariharakala for Anuvasana Basti
5. List ayoga and atiyoga lakshana of marsa nasya with taila and their management
6. Explain the significance of diet before and after Nirooha. Prepare a diet chart
7. Explain the physiology and pharmaco-dynamics of nasya
8. Explain the practical utility of Erandamuladi Niruha Basti along with its ingredients and indications
9. Name one swarasa, kalka, choorna, taila and ghrita each for nasya in peenasa. Explain the exact indication of each in the samprapti of peenasa.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Panchakarma)  
(..... scheme)**

**Paper IV – Raktamokshana, Physiotherapy and Disease wise Panchakarma**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the role of Panchakarma in different stages of Jvara

**Short Essays**

**(8x10 = 80)**

2. Explain the various Physiotherapy exercises employed in frozen shoulder and slip disc.
3. Describe the method of administration of Jalouka
4. Explain the use of various Panchakarma Procedures in Jaundice.
5. Explain the vyapat of siravedha and their management according to Ayurveda and modern medicine.
6. List the physiotherapy techniques to be used in the management of Ardita. Explain Ultrasono therapy in detail.
7. Discuss the karmukata of Raktamokshana
8. Write down the principles of occupational therapy. List three self-help devices and explain how they help in rehabilitation therapy.
9. Explain the samyakyoga, ayoga and atiyoga lakshana of Prachana with its management

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

### **3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

## **4. INTERNSHIP**

Not applicable

## **5. ANNEXURES**

### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised

University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study

7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman

8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.
12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

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## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Vachaspati – Mano Vigyana evam  
Manasa Roga  
(M.D. (Ayurveda) - Psychiatry)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Vachaspati – Mano Vigyana evam Manasa Roga (M.D. (Ayurveda) – Psychiatry)

### 2.2 Objectives:

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

## **2.9 Teaching learning methods**

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## **2.10 Content of each subject in each year**

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**

**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
- 5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati  
Aushadhi-yog Parikshana Paddhati  
Swastha, Atura Pariksha Paddhati  
Dashvidha Parikshya Bhava  
Tadvidya sambhasha, vadmarga and tantrayukti
- 6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**
- 7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

  - a. Panchamahabhuta and tridosha.
  - b. Concepts of rasa, guna, virya, vipak, prabhav and karma
  - c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.
- 8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.
- 9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
- 10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**
- 11. Introduction to latest Trends in Drug Discovery and Drug Development**
  - Brief information on the traditional drug discovery process
  - Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
  - Brief introduction to the process of Drug development.
- 12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies

Randomized Controlled Trials (RCT) & their types

Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies –

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
National Pharmacovigilance Programme for ASU drugs.
14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

1. Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
2. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
3. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
4. Measures of Central tendency – Mean, Median and Mode.
5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
6. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
7. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
8. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete

**9. Measures of Central tendency – Mean, Median and Mode.**

**10. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation**

**11. Non parametric methods: Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)**

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.  
Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:**  
Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography: computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics**

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

**PRACTICAL**

**100 Marks**

**Teaching hours – 120**

**I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and

	toxicology
5	Biochemistry (Clinical) Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
6	Clinical Pathology Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
7	Imaging Sciences Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
8	Clinical protocol development

## II. MEDICAL STATISTICS

Practical hours - 20

Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.

Records to be prepared.

Distribution of marks (Practical):

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

1. Aushotosh Kar "Pharmacognos & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
4. Kokate, CK., Purohit, AP, Gokhale, SB (2010). Pharmacognosy. Nirali Prakashan. Pune.
5. Kokate, CK., Khandelwal and Gokhale, SB (1996). Practical Pharmacognosy. Nirali Prakashan. Pune.

6. Trease G E and Evans W C, Pharmacognosy, Bailliere Tindall, Eastbourne, U K.
7. Tyler V C., Brady, L R., and Robers J E., Pharmacognosy, Lea and Febiger, Philadelphia.
8. Tyler VE Jr and Schwarting AE., Experimental Pharmacognosy, Burgess Pub. Co, Minneapolis, Minnesota.
9. Wallis- TE (2011)- reprint. Practical Pharmacognosy (Fourth Edition) Pharma Med Press, Hyderabad.
10. Wallis T E, Analytical Microscopy, J & A Churchill limited, London.
11. Wallis T E., Text Book of Pharmacognosy, J & A Churchill Limited, London.
12. WHO guidelines on good agricultural and collection practices- (GACP) for medicinal plants (2003).World Health Organization- Geneva.
13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
2. Brain, KR and Turner, TD. (1975). The Practical Evaluation Phytopharmaceuticals. Wright Scientechnica, Bristol.
3. Galen Wood Ewing (1985). Instrumental Methods of Chemical Analysis. McGraw- Hill College ; Fifth edition
4. Harborne, JB (1973). Phytochemistry Methods. Chapman and Hall, International Edition, London.
5. HPTLC- Fingerprint atlas of Ayurvedic Single Plant Drugs mentioned in Ayurvedic Pharmacopoeia Vol- III and IV. CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA. New Delhi.
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7. Khopkar, S. M. Analytical Chemistry, New Age International Publishers , 3 rd edition
8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
9. Mahadik KR, Bothara K G. Principles of Chromatography by, 1st edition, Nirali Prakashan.
10. Qadry JS and Qadry S Z., Text book of Inorganic Pharmaceutical and Medicinal Chemistry, B. S. Shah Prakashan, Ahmedabad.
11. Quality Control Methods for Medicinal Plant Material. Reprint (2002). WHO Geneva.
12. Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
15. Stahl E., Thin Layer Chromatography - A Laboratory Handbook, Springer Verlag, Berlin.

16. Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo and Dev Dutt Rakesh (2008). Extraction Technologies for Medicinal and Aromatic Plants INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste

### **Biochemistry and Laboratory techniques:**

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
3. David Frifelder. W. H. Freeman. (1982). Physical Biochemistry by; 2 edition
4. David Sultan (2003). Text book of Radiology and Imaging, Vol-1, 7th Edition.
5. Deb, A.C., Fundamentals of Biochemistry, Books and Allied (P) Ltd, 2002.
6. Harold Varley. Practical Clinical Bio-chemistry
7. Kanai L.Mukherjee. Clinical Pathology:, Medical Laboratory Technology Vol. I.Tata McGrawHill 1996, New Delhi.
8. Gradwohl, Clinical Laboratory-methods and diagnosis, Vol-I
9. Clinical Biochemistry -Sabitri Sanyal, Clinical Pathology, B.I.Churchill Livingstone (P) Ltd, New Delhi.2000.
10. Satyanarayanan,U. Essentials of Biochemistry, Books and allied(P) Ltd.2002
12. Zubay, G.L. Biochemistry, W.M.C. Brown Publishers, New York 1998.
13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
3. Altick and Fenstermaker. (2007). *The Art of Literary Research*. 4th ed. W. W. Norton. Castle, Gregory. *Blackwell Guide to Literary Theory*. Blackwells,
4. Bowling, A. (2002). Research Methods in Health (2nd ed). Buckingham: Open University Press.
5. Day R.A. How to write a scientific paper. Cambridge University Press.
6. Cooray P.G. Guide to scientific and technical writing.
7. Deepika Chawla and Neena Sondhi. (2011). Research Methods- Concepts and cases. New Delhi: Vikas Publishing House.
8. Greenhalgh, T. (2006) How to Read a Paper: The Basics of Evidence-Based Medicine. (3rd ed) Blackwell
9. Kothari - CR (2004). Research Methodology- Methods and Techniques (Second Revised Edition). New Age International Publishers- New Delhi.
10. Kumar, R. 2005. *Research Methodology: a Step-by-Step Guide for Beginners*, 2<sup>nd</sup> ed. Thousand Oaks, CA, London: Sage Publications.
11. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
12. Relevant portions of Ayurvedic Samhitas and other texts

### **Drug research and development:**

1. RICK NG, (2009). DRUGS-from discovery to approval. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
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4. WHO Guidelines on Safety Monitoring of herbal medicines in pharmacovigilance systems. (2004). WHO- Geneva. ISBN 92 4 1592214.
5. Natural products isolation. (2006) 2nd ed. / edited by Satyajit D. Sarker, Zahid Latif, Alexander I. Gray. (Methods in biotechnology; 20). Includes bibliographical references and index. Humana Press Inc. ISBN 1-58829-447-1 (acid-free paper) – ISBN 1-59259-955-9 (eISBN)
6. Gazette Extraordinary Part- II-Section 3 - Sub section (i) December 2008. Govt of India. AYUSH Guidelines on safety studies- Rule 170 of Drugs and Cosmetics Act.
7. OECD (2000) Guidance Document on Acute Oral Toxicity. Environmental Health and Safety Monograph Series on Testing and Assessment No 24.
8. OECD Guideline for the Testing of Chemicals – Repeated Dose 90-day Oral Toxicity Study in Rodents, 408, 1998.  
<http://browse.oecdbookshop.org/oecd/pdfs/free/9740801e.pdf>(latest version)
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10. ICH Harmonised Tripartite Guideline (2000). Maintenance of the ICH Guideline on Non-clinical Safety Studies for the conduct of Human Clinical Trials for Pharmaceuticals M3 (R1).
11. Ghosh M.N.: Fundamentals of Experimental Pharmacology, *Scientific Book Agency. Bombay.*
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13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
14. Ravindran R.: X-Pharm (Software), Indian Journal of Pharmacology, *JIPMER, Pondicherry.*

### **Biotechnology and Bio-informatics:**

1. Angela M. Meireles A (2009). Extracting Bioactive compounds for food products. Theory and applications. CRC- Press Taylor and Francis Group.
2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978- 81-8318-831-9
4. Lesk, A.M. Introduction to Bioinformatics Oxford 2002.

5. Satyanarayana, U.: Biotechnology, Books and Allied (P) Ltd, Kolkata, 2005
6. Setubal J. C and J. Meidanis, Introduction to Computational Molecular Biology, PWS Publishing Company, 1997.
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8. <http://www.zygogen.com>.
9. <http://www.dsir.nic.in/reports/tifp/database/metallo.pdf>.
10. [www.consort-statement.org](http://www.consort-statement.org)
11. [www.strobe-statement.org](http://www.strobe-statement.org)
12. [www.icmr.nic.in](http://www.icmr.nic.in)

### **Clinical Evaluation:**

1. CDSCO, Good Clinical Practices For Clinical Research in India, Schedule Y (Amended Version – 2005), <http://cdsco.nic.in/html/GCP1.html>
2. Ethical Guidelines for Biomedical Research on Human subjects. (2000). Indian Council of Medical Research- New Delhi.
3. Gallo P., Chuang-Stein C., Dragalin V., Gaydos B., Krams M., Pinheiro J. Adaptive Designs in Clinical Drug Development—An Executive Summary of the PhRMA Working Group. *Journal of Biopharmaceutical Statistics*. 16: 275–283; 2006
4. Good Clinical Practices- (2001). Guidelines for Clinical Trial on Pharmaceutical Products in India. Central Drugs Standard Control Organization. Directorate General of Health Services. New Delhi. (<http://WWW.cdsco.nic.in.ich.org>)
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9. William C. Scheffer Introduction to Clinical Researchs

### **Medical Statistics:**

1. Armitage, P. and Berry, G. (1994) Statistical Methods in Medical Research (3rd ed). Blackwell Science.
2. Armitage P, Berry G, Matthews JNS: *Statistical Methods in Medical Research*. Fourth edition. Oxford, Blackwell Science Ltd; 2002
3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
4. Bradford Hill – Basic Medical Statistics
5. Cambell, M.J. and Machin, D. (1993) Medical Statistics: A Common Sense Approach (2nd ed). Chester: Wiley.
6. Dwivedi S. N., Sundaram K. R and V. Sreenivas (2009). Medical Statistics -

- Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
7. Gupta S.P. - Fundamentals of statistics, Sultan Chand. Delhi.
  8. Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India
  9. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
  10. Mehdi, B and Prakash A. (2010). Biostatistics in Pharmacology. Practical Manual in experimental and clinical pharmacology. 1st Edition. New-Delhi: Jaypee brothers Medical Publishers
  11. Rao, NSN and Murthy, NS. (2008) 2nd Edition. Applied statistics in health sciences. Jaypee Brothers Medical Publishers (P) Ltd. Bengaluru, New Delhi.
  12. Rick J Turner and Todd A Durham (2008). Introduction to Statistics in Pharmaceutical Clinical trails. Published by the Pharmaceutical Press- An imprint of RPS Publishing, 1 Lambeth High Street, London SE1 7JN, UK
  13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
  14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
  15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana - A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.D.-AYURVEDA PRELIMINARY**

#### **MANO VIGYANA EVAM MANASA ROGA (Psychiatry)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

**PART A**

**50 Marks**

1. Concept of Manas in Sankhya, Yoga, Nyaya, Vaisheshika, Purva Meemamsa, Vedanta, Bouddha, Tantra and Purana. Philosophical concepts in Ayurveda and its applications.
2. Basic principles of Ayurveda psychology - Srishti utpatti, Triguna, Loka purusha samya Siddhanta, determination of Purusha according to Dhatubheda, Chikitsadhikrita purusha in a psycho somatic axis, Perception and cognition in Ayurveda. Dosha, Dhatu, Agni, Mala Vigyanam and its psychosomatic importance, 'Shariramapi Sattvamanuvidhiyate Sattvam Cha Shariram'. Concept of Dharma, Artha, Kama and Moksha, concept of Apunarbhava in Ayurveda, Trividha Eshana.
3. Introduction to psychoanalytical concept – Id, Ego, Super ego. Concept of mind in Western psychology
4. Concept of Mana in Ayurveda, Mano Nirupana, Manaswarupa, Sthana, Vishaya, Karma, Guna and Dosha. Manovyapara, Gyanotpatti, Gyanotpattau Manaso

Dayittwam. Manas as 'Cheshta Pratyayabhutam Indriyanam Indriyo-Pakramaniyam'. Atma nirupana, Atmaguna.

5. Psychological Processes – Attention and perception, intelligence, creativity, motivation, emotion, sex and other drives, states of consciousness, learning, memory, cognition and dream, knowledge of developmental psychology.
6. Understanding of Manasika bhava / Manovikara and their importance in Manasroga Nidana and Chikitsa – Iccha, Dwesha, Sukha, Dukha, Lobha, Moha, Krodha, Shoka, Vilapa, Preeti etc. Emotional aspects of human behaviour.
7. Manovaha Srota Nirupana, basics of neurophysiology, neurotransmitters, psychoneuroimmunology, physiological basis in human behaviour, influence of nervous system on human behaviour, sensory systems, autonomic nervous system, study of Ojas, Gyanendriya and Buddhi.
8. Satvikadi Kayanam samanya gyanam, basic concepts of personality, Sattvabala and mental disorders.
9. Manasroga samanya nidana, Pragyaparadha- samkshipta vivarana. Vibhramsha of Dhee, Dhriti and Smriti, Mano Dosha and Sharir Dosha in psychopathogenesis, Sadvritta and its importance.
10. Relation of psychology with parapsychology.

## **PART B**

**50 Marks**

1. Basic understanding of Sattva Pariksha , utility of Trividha, Shadvidha, Ashta Sthana, Dashavidha and Srotopariksha in psychiatric practice, Vikriti pariksha- Vibhrama of Mano -Buddhi- Samgya Gyan-Smriti-Bhakti-Sheela-Cheshta and Achara.
2. Psychiatric examination- Mental status examination, mini mental status examination, cognitive assessment with higher mental functions, personality and self in psycho analysis, basic psychiatric assessment inventories- Hamiltons scale, Bech's inventory, GRISS questionnaire, Weschlers' scale for intelligence.
3. Clinical psychology – General psychology with schools of psychology, theories of personality development, social dimensions of behavior and current issues, doctor patient relationship, patient interviewing and study of therapeutic relationship. Basic knowledge about anxiety disorders, delusional disorders, phobic disorders, lying, stealing, juvenile delinquency. Mental hygiene and behaviorism.
4. Technical terms used in psychiatric practice, general symptoms of psychiatric disorders, classification of psychiatric disorders as per DSM and ICD classifications.
5. Basic knowledge about organic psychosis, psychoneurosis, Schizophrenia, mood disorders, personality disorders, sexual perversions, sleep disorders and mental retardation.
6. Basic understanding of Bhuta, Graha and Bhutavidya. Hetu, Lakshana and Samprapti of Unmada, Apasmara, Atattwabhinivesha, Grahavesha, Bhutonmada, Gadodvega, Yoshapasmara, Madatyaya.
7. Nidra and Swapna, its types and role in psychopathogenesis.
8. Basic understanding of Chikitsa bheda, descriptions of general and specific principles of Kayachikitsa, its practical application in Manasroga, Daivavyapashraya, Yuktivyapashraya, Satvavajaya chikitsa and Dravya-adravya chikitsa, Manodosha Samanya chikitsa, basic treatment principles in Manasika vyadhi, Panchkarma and its application in Manasika roga, Importance of Rasayana and Vajikarana therapies in Psychiatric practice, Medhya rasayana.
9. General knowledge in the basic management principles of psychiatric disorders in modern medicine. Basic knowledge on psychopharmacology, forensic psychiatry, community psychiatry, liaison psychiatry, child psychiatry and geriatric psychiatry.

10. Application of psychiatric knowledge in other specialities viz. Kayachikitsa, Agadatantra, Shalya, Shalakya, Prasuti- Stri Roga and Kaumarabhritya.
11. Psychosomatic disorders, psychological understanding on essential hypertension, asthma and other allergic disorders, psoriasis, IBS, ulcerative colitis, CAD, tension/vascular headaches, pseudopsychosis, hyperemesis gravidarum, enuresis, diabetes mellitus, obesity, autoimmune disorders, neoplasm and psychosexual disorders.
12. Basic understanding of diagnostic applications- Haematological, biochemical, serological, histopathological, imaging - ECG, EEG, USG, MRI scan, CT scan, PET scan in psychosomatic, psychiatric and neuro- psychiatric practices.

### **PRACTICAL**

**100 Marks**

#### **Contents:**

1. Daily hospital duties in OPD, IPD and casualty
2. Practical Record Book
  1. Psychiatric – 5 cases
  2. Psychosomatic – 5 cases
  3. Paediatric / Geriatric Psychiatry – 5 cases
  4. Psychosexual / Substance abuse – 5 cases
3. Psychiatric Inventories- MMSE, Hamilton Anxiety Depression Rating Scale, Brief Psychiatric Rating Scale, Bech's Depressive Inventory, Weschlers' scale, GRIS questionnaire – 2 Cases each
4. Manasa Bhava assessment scales- Sattvabala, Manasa Kaya, Smriti, Buddhi, Raja and Tama rating, Manas Bhava Pariksha – 2 cases each

#### **Distribution of Marks:**

- |  |                    |
|--|--------------------|
| 1. Case Records of Patients in detail (25 Cases) | - 20 Marks         |
| 2. Bed side clinical case taking                 |                    |
| a. Long Case                                     | - 20 Marks         |
| b. Short Case                                    | - 10 Marks         |
| 3. Procedure                                     | - 15 Marks         |
| 4. Instruments and spotting                      | - 15 Marks         |
| 5. Viva-voce                                     | - 20 Marks         |
| <b>Total</b>                                     | <b>- 100 Marks</b> |

#### **Reference Books:-**

- |   |                                      |
|---|--------------------------------------|
| 1. Related matter of Charak, Sushrut and Vagbhata and other ancient texts with commentaries |                                      |
| 2. Prachin Manovikara Vigyanm   | - Ayodhya Prasad Achal               |
| 3. Ayurvediya Padarth Vigyan  | - Ranjit Rai Deshai                  |
| 4. Ayurved Darshan  | - Acharya Rajkumar Jain              |
| 5. Purusha Vichaya  | - Prof. V.J. Thakkar                 |
| 6. Ayurvediya Manas Vigyan  | - Prof. Ram Harsh Singh              |
| 7. Yoga evum Ayurved  | - Acharya Rajkumar Jain              |
| 8. Basic principles of Ayurvediya Padartha Vigyan   | - Dr Yogesh Chandra Mishra           |
| 9. Synopsis of Psychiatry   | - Harold kaplon and Benjamin saddock |
| 10. Oxford textbook of Psychiatry   | - Michael Gerlder, Paul Harrison     |

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| 11. General psychology and Abnormal psychology        | - S.K. Mangal                              |
| 12. A text book of Post Graduate Psychiatry           | - Neeraj Ahuja                             |
| 13. Mind in Ayurveda and other Indian Traditions      | - A.R.V.Murthy                             |
| 14. Psychopathology in Indian medicine                | - Satyapal Gupta                           |
| 15. Body- Mind-Spirit Integrative Medicine            | - Prof. Ram Harsh Singh                    |
| 16. Rationale of Ayurveda Psychiatry                  | - Dr. A.R.V. Murthy                        |
| 17. Foundations of contemporary Yoga and Yoga Therapy | - Prof. Ram Harsh Singh                    |
| 18. Stress and its Management                         | - Dr. K.N. Udupa                           |
| 19. Concept of Mind                                   | - Edited by Prof. C.R. Agnivesh, Kottakkal |
| 20. Kayachikitsa - Part 3                             | - R. R. Pathak and Vidhyadhar Shukla       |
| 21. Panchakarma Illustrated                           | - Prof. Shrinivasa Acharya                 |
| 22. Unified Dimensions of Ayurvedic Medicine          | - Dr. J.S. Tripathi                        |
| 23. Essential Psychiatry                              | - Bhatia MS                                |
| 24. Sahassrayoga                                      | - Nishteswar and Vaidyanath                |
| 25. Ayurveda and the Mind                             | - David Frawley                            |
| 26. Manasa Roga Vijnana                               | - Balakrishna                              |
| 27. Comprehensive Textbook of Psychiatry              | - Kaplan and Sadock's                      |
| 28. Psychiatry for medical students                   | - Robert J Waldinger                       |
| 29. Introductions to Psychology                       | - Morgan / King.                           |

#### **Additional Books for Reference**

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|--------------------|-----------------------|
| 1. Concept of Mind | - Ed. Dr. C R Agnives |
| 2. Sahasrayogam    | - Dr. Prabhakara Rao  |

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### **M.D.- AYURVEDA FINAL YEAR**

#### **MANO VIGYANA EVAM MANASA ROGA (Psychiatry)**

#### **PAPER - I**

#### **Manovyapara evam Manovigyanam**

**100 Marks**

1. Prachya - arvachya matanusara Mano vighyanasya Bhutavidyayah, Amanusha tatha Grahadinam parichaya, setihasa.
2. Prachya arvachya matanusara Manasah Nirupanam-Concept of Manas from Ayurved and modern perspective.
3. Vividha darshananusara Manasah varnanam.-concept of mind in various philosophies.
4. Manasah Svarupam – Structure of mind, Manasah Sthanam- Location of mind, Manovishayah - Objects of mind, Manogunah (Anutva and Ekatva) – Attributes of mind - Minuteness and oneness, Manasah Ubhayatmakatvam - Duality of Manas, Manasah Dravyatvam Karanatvam cha - mind as a substance and tool, Manasah Karanadravyatvam - mind as causative substance, Manodoshah - (Rajas and Tamas) ,Manasah Bhoutikatvam - Elemental nature of Manas Introduction to concept of Buddhi and Ahamkara - intellect and ego, Manasah Ahamkarikatvam – origin of mind from ego (samkhya), Manasah Annamayatvam - Relationship between food and mind, Manasah trigunatmakatvam (Sattva,

Rajas, Tamas) - mind and the three major attributes, Manasah jadatvam- inertia of mind, Manasah dhatutvam - mind as a component of living being, Manasah Karma - Actions of Manas.

5. Manovyapara Nirupanam.

6. Manovyapare Pranodana sadhaka Bodhakadi Doshanam Sambandhah - Relation of humoral fractions such as Prana, Udana, Sadhaka- Bodhaka in the activity of Manas, Concept of Ojas and Manas

7. Katham prakopayanti ManoDoshah SharirDoshah?- How does manasika Doshas aggravate sharirika Doshas?

8. Indriya panchapanchakam- five factors in relation to the mental faculties.

9. Gyanendriyanam vishayah- the objects of sense faculties.

10. Gyanotpatti prakriyayam Manaso pradhanyam- Importance of Manas in cognitive process.

11. Indriyarthagrahananantaram Manasah vyapara avum gyanotpattou manaso dayitvam - Action of Manas in cognition after reception by respective Indriya.

12. Knowledge of Dirgha Shashkuli nyaya, Alata-chakra nyaya, Vichi-taranga nyaya, Kadamba-mukula nyaya.

13. Shabda – sparsha – rupa – rasa – gandhanam grahakam manah, tasya mahatvam cha - Manas as conductor of sense objects and its importance.

14. Vayuh indriyanam udyojakah tatha Manasah preranam -Vayu as stimulator of indriya and initiator of manas.

15. Vakpravrittou Manasah yogadanam - Role of Manas in production of speech.

16. Pratisharire Manasah bhinnatvam - Concept of individuality of mind.

17. Chikitsya purushah- treatable person (living being).

18. Atma nirupanam- description of Atma, Sukshma sharirsya varnanam- description of subtle body, Atma manasoh sambhandhah - relation between Manas and Atma.

19. Antah karana chatushtaya (the four internal faculties).

20. Importance of Dhi, Dhriti and Smriti- importance of intellect, retention power and memory.

21. Role of manas in achieving Tri eshana and Chaturvidha Purushartha/chatur varga - role of manas in attaining the pursuits and four goals of life.

22. Concept of Satyabuddhi, Ritambhara Pragya and Upadha - concept of true and false knowledge.

23. Concept of Punarjanma, Purvajanmakrita karma, Karmaphala.

24. Manovaha Srotasam Parichaya – Introduction of Manovaha srotas (channels of mind)

25. Manovaha, Samgyavaha, Buddhivaha, Chetanavaha, Chetovaha, Vatavaha, Raktavaha adi upayukta Srotasam Manasroge varnanam- Description of Manovaha, Sangyavaha, Buddhivaha, Chetanavaha, Vatavaha, Raktavaha srotas etc in relation to Manasroga

26. Shatchakra nirupanam.

27. Sattvasara purusha- person with mental excellence.

28. Nidravichara- Concept of sleep, Swapna vichara- Concept of dream, Tandravichara – Concept of drowsiness.

29. Concept of manasprakriti- mental temperament, Concept of Manasa bhava in Shareerika prakriti.

30. Manasaroge Manovigyane cha upayukta Paribhashika shabdanam vishleshanam- technical terms used in psychology and psychiatry

31. Manas roge upayukta Samhitānam satika adhyāyanam- study of portions of treatises useful in psychiatry along with their commentary.
32. Arvachina mano vigyanasya adhishtana siddhantah, mastishka karmanam sthapanam cha-Fundamentals of modern psychology and functions of brain.
33. Applied Neuro-anatomy and physiology, Neurotransmitters, Psychoneuro immuno endocrinology
34. Manasah swabhavika pratirodhah - Defence mechanism of mind.
35. Shishu manas-shastra, vikasatmaka Manas-shastra – Shishu, Bala, Kumarah, Proudah, Vriddhah cha- Essential elements of psychology, developmental psychology: child, adolescence, adult and aged.
36. Bhava, Sheela, Buddhi, Smriti, Prerakatva adinam gyanam -Concept of Mood, behaviour, attitude, emotions, intelligence, memory, motivation, perception etc.
37. Manas Swasthya Evam Manoroganam Paribhasha – Definition of Mental Health and psychiatric disorders.
38. Manasrogvigyansya mahatvam, phalam, prayojanam, prabhavashcha

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## PAPER – II

## Manovaiikariki evam Bhutavidya

100 Marks

1. Manovega, Mano vikarah, ManoDoshah, Mana Sharirayoh paraspara anuvaidhayitvam - mutual symbiosis of sharir and manas, Manasah chanchalatvam, Manaso vyadhinam ashrayatvam, Manasrogeshu Doshanam paraspara anubandhah, Manasvyadhi utpattou sharer Doshanam vikarakaritvam, Indriyadinam hinamithyatiyogah. Prajnaparadha, Purva janma krita karma tatha Papa karmasya rogkarakatvam, Adharmasya Achararasayana upekshanasya cha rogkarakatvam.

**Bhutavidya** – Definition and scope with applied aspects: Divergent views

1. Types and Characteristic features of Bhuta and Graha, Amanushopasarga Vikara caused by Bhuta and Graha, Aetio-pathogenesis of Bhuta and Graha
2. Relationship of Bhuta with Jwara, Ojakshaya, Manovikara, Arishta Lakshana and Daivabala Pravritta diseases.
3. Grahavesha, affecting time of Graha, their specific features, prodromal features and prognosis.
4. Differential understanding of Balagraha and Grahabadha.
5. Sushrut's concept of invasion of Bhuta/Graha.
6. Manas Rognam Nidan, Sampraptischa
7. Manobuddhyadi Vibhramsha
8. Manas dharaniya vega.
9. Kayika-Vachika-Manasika karma hinamithyati yoga in Manasa roga samprapti.

**Manovikriti –Psychopathology**

1. Bijapradosha and Kulaja bhava in manas roga -Genetics and hereditary factors in Psychiatry.
2. Manas roganam prachya arvachina matanusarena vargikaranam
3. Classification of manas rogas yatha kevalamanas, manas sharir, shariramanasika, agantuja adayah
4. Understanding of Parapsychology and its role in overt psychiatric disorders.
5. Recent ICD and DSM classification

### **Manas Rogi pariksha vidhi- Psychiatric examination**

1. Prachya arvachina matanusarena rogi pariksha visheshena sattva pariksha – Examination of patient according to Ayurvedic and modern methods
2. Trividha Sattva Pariksha
3. Charakokta Anumana Pariksha
4. Manasika avastha Pariksha - Mental Status Examination
5. Vividha pariksha manakah -Different psychiatric assessment inventories like Hamilton's scale, Bech's Depression inventory etc.
6. Manorog chikitsiya manomapaka upakaranani cha - Psychiatric and psychometric tools for diagnosis, Evidence based diagnostic methods.
7. Prayogashaliya pariksha -Investigations– Haematological, biochemical, neuro-physiological, endocrinal, EEG, radio imaging- MRI etc.
8. Manasrognam sadhyasadyata – Prognosis of psychiatric diseases.
9. Manas Rog Sandharbhe Vidhi Vaidyakasya vistrta gyanam.
10. Forensic psychiatry- Knowledge about legal and ethical issues in psychiatry, Indian lunacy act, mental health act, Norms to setup a well equipped Mental Hospital (OPD, IPD)

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### **PAPER - III**

### **Manas Roga Chikitsa**

**100 Marks**

Comprehensive knowledge of etiology, demography, underlying psycho pathogenesis, symptomatology, complications, investigations, diagnosis, prognosis and drug-non drug management of following psychiatric disorders as per Ayurvedic - Modern therapeutics with their pharmacodynamics:

1. Unmada (Psychoses)- Nija, Agantuja Unmada, Bhutonmada, Vishaja Unmada, Sutikonmada, Smaronmada, Tattvonmada- Paronoia, Mano dukhaja Unmada -Stress related disorders.
2. Apasmara - -seizure disorders
3. Apatantraka – hysterical convulsions
4. Tandavaroga -Chorea
5. Yoshapasmara - conversion disorders
6. Atatvabhinivesha- Obsessive compulsive disorders
7. Vishada- Depressive illness
8. Gadodvega -Hypochondriasis
9. Mada, Murchha, Sanyasa- sensorial disorders
10. Madatyaya, Panatyaya (Panavibhrama, Paramada, Panajirna) - Substance abuse disorders.
11. Nidra vikara (Sleep disorders) , Klama, Tandra, Glani.
12. Bhrama, Vibhrama - Delusional disorders.
13. Chittodvega - Generalized Anxiety disorders.
14. Smriti vikara (memory disorders)
15. Manasika klaibya, Sushrutokta Napumsakata
16. Manasa Dosha Vikara- Kama, Krodha, Lobha, Moha, Irshya, Bhaya, Mana, Mada, Dambha, Ahamkara, Harsha, Matsarya, Iccha, Dvesha.
17. Mood and affective disorders – major depressive disorders, mania and their

possible Ayurveda co-relates.

18. Schizophrenia

19. Personality disorders

20. Behavioural disorders

21. Organic mental disorders

22. Post traumatic stress disorders

23. Psycho sexual disorders

24. Eating disorders

25. Somatoform and dissociative disorders

26. Senile psychiatric disorders - Dementia, Alzheimer's disease, Parkinsonism, Menopause, Andropause and their possible Ayurveda co-relates.

27. Adhi- Vyadhi Roganam Manasika Prabhava Chikitsa Cha - Psychosomatic disorder--Bhayaja and Shokaja Atisara, Kamaja and Shokaja Jwara, Tamakashwasa, Prameha, Amlapitta, Parinamashula, Grahani, Uccha Raktachapa(Hypertension), Shula (pain disorders), Twak Vikara.

28. Jirna- Asadhya Sopadrava Vyadhinam Vivechanam – Mental problems in chronic incurable diseases like AIDS, Cancer etc.

29. Mano prakriti vikara – psychopathic personality.

30. Jivana Shaili Tatha mano sammarda janya rogah - Life style and stress related disorders.

31. Shishu tatha Kumara Manoroga - Child and adolescent psychiatry.

32. Jadata, Buddhimandya , Adhyayana Akshamata – Mental deficiency, mentally challenged and learning disabilities.

33. Achara vaikalya - Conduct disorders

34. Manobhava vikara - Emotional disorders

35. Cerebral palsy, infantile autism, Attention Deficit Hyperactive disorders, Tourette's disorder with their possible Ayurveda co-relates.

36. Preventive aspects in Manas Roga – Achara Rasayana, Sadvritta, Shodhana, Rasayana and Vajikarana

37. Manas Roganam Samanya Vishesha Chikitsa Siddhantanam Varnanam,- Daiva Vyapashraya, Yukti Vyapashraya, Sattvavajaya, Adravyabhuta Chikitsa Upayah.

38. Sattvavajaya Chikitsa: Its application and techniques viz. Dhi, Dhairya, Atma Jnana, Kula Jnana, Kala Jnana, Desha Jnana, Bala Jnana, Samadhi, Santwana, Ashwasana, Ayurveda Psycho shock therapy viz. Trasana, Bhayadarshana, Adbhuta Darshana, Vismarana, Vismapana and Pratidvandwi Bhava with their scientific basis.

39. Role of Rasayana, Medhya Rasayana, Achara Rasayana and Vajikarana in Manasa Roga

40. Pathyapathya in Manasa Roga.

41. Manas Rogopayogi Vividha Aushadheenam Vivechanam: Ekamulika (Single drug), Panchavidha Kashaya Kalpana, Rasa Rasayana etc.

42. Brihatrayee, Yogaratnakara, Sharngadhara, Gadanigraha, Bhavaprakasha, Sahasrayoga ukta vividha yoganam vivechanam:Brahmi, Mandukaparni, Vacha, Jatamansi, Yashtimadhu, Shankhapushpi, Kushmanda, Ashwagandha, Kushtha, Tagara, Guduchi, Jyotishmati, Srikhandaichurna, Saraswatachurna etc.

Swarna, Swarnamakshika Bhasma, Rajata, Pravala, Mukta, Manahshila, Krishna Chaturmukha Rasa, Krishnachaturbhuj Rasa, Brihatvatachintamani Rasa,Vata kulantaka Rasa, Manasmitra vataka, Smritisagar Rasa, Unmada gajakesari Rasa,

Apatantrakari vati, Kumarakalyana Rasa etc. Kalyanaka ghrita, Brahmi ghrita, Mahapanchagavya ghrita, Mahapaishachika ghrita, Mahabhutarava ghrita, Kushmanda ghrita, Purana ghrita, Panchagavya ghrita etc.

43. Saraswatarishta, Ashwagandharishta, Chittachandirasava etc.

44. Himasagara taila, Tungadrumadi taila, Gandharaja taila, Brahmi taila, Sidharthaka agada etc.

45. Dhupa, Nasya, Lepa, Anjana yogas useful in Manas Roga.

46. Folk Medicine in Manasa Roga.

47. Mano Bhesaja vigyanam - Essentials of Psycho pharmacology, Knowledge of Biological and Pharmacological Therapies in the Management of Various Psychiatric diseases such as hypnotics, sedatives, anxiolytics, mood stabiliser/elevators, antidepressants, antipsychotics, anticonvulsants, Electro-convulsive therapy(ECT) and its applied aspects.

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**PAPER – IV**

**Manasa Roga anya Chikitsa evam Yoga**

**100 Marks**

**Panchakarma**

1. Importance of Panchakarma and other allied procedures in the management of Manasa Roga.
2. Theoretical knowledge and application of the following karmas in Manasa Roga – Snehana, Svedana, Vamana, Virechana, Basti, Nasya, Raktamokshana, Mastishkya-Shiro-Basti, Shiro-Dhara, Shiro-Pichu, Shiro-Abhyanga, Murdhni taila, Anjana, Dhupa, Dhupana etc.

**Yoga**

1. Manovigyana sandharbhe yogasya vaishishtyam, Yogashastrasya upayogita mahatvam cha.
2. Yogasya darshanika svarupagyanasahitam tasya astanganam samichinam Gyanam.
3. Ayurveda drishtya yoga adhyayanasya upayogita, Ayurveda shastre pratipaditah yogasya siddhantah.
4. Satvavajaye gyana-bhakti-karma yoganam manasa roge vivechanam-Hatha yogascha.
5. Role of Shatkarma - Kapalabhati, Trataka etc. in Manasa Roga.
6. Naishthiki chikitsa in Manasa Roga.
7. Therapeutic potential of Yoga, Psycho biological effects of Yoga, Spiritual therapy and Yoga.
8. Sudarshana kriya , Transcendental meditation, Yoga nidra, Vipashyana and other allied yogic techniques in Manasa Roga chikitsa.
9. Manas and prana (bio-energy), pranic healing, means of bio-energy modulation in Manasa Roga.

**Other allied therapeutic procedures:**

1. Various methods of psychotherapy and counselling techniques, transactional analysis, behavioural therapy, psycho analysis.
2. Swapna Samvahana chikitsa -Hypnotherapy-Past life Regression and Age Regression Therapy in Manasa Roga.

3. Knowledge of psychiatric emergency and their management.
4. Knowledge of surgical intervention in Manasa Roga
5. Recent advances and updates in concepts, drugs and therapeutic procedures in Manasa Roga.

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### Content of the Practicals

Sl. No.	Topic	No. of Cases
1.	Hypnotherapy techniques	10
2.	Case Study	
	Unmada	20
	Apasmara	20
	Atatvabhiniवेश	10
	Chittodvega	25
	Vishada	25
	Madatyaya	10
	Psycho Sexual disorders	25
	Psychogenic headache	20
	Nidra vikara	20
	Stress related disorders	25
3.	Examination of Manasika Bhava in psychosomatic illness	25
4.	Yogasana, Pranayama and Meditation Techniques	25
5.	Panchakarma Procedures in Manasa Roga	25
6.	Anjana, Dhoopanadi Karma	25
7.	Instruments (GSR biofeedback, EST, EEG, etc.)	25
8.	Counselling on the pattern of Sattvavajaya	25
9.	Psychometric scales (Ayurveda and conventional)	30

Visit to Mental Hospitals

### Pattern of practical examination

1.	Practical Record Book	- 10 Marks
2.	Bed side examination	
	a. Long Case	- 25 Marks
	b. Short Case	- 10 Marks
3.	Assessment of Scales and Inventories (Ayurveda and Conventional)	- 10 Marks
4.	Thesis Presentation (PPT)	- 25 Marks
5.	Viva-voce	- 20 Marks
<b>Total</b>		<b>- 100 Marks</b>

### REFERENCE BOOKS:

1. Related matter of Charak, Sushrut and Vagbhata and other ancient texts with commentaries
2. Prachin Manovikara Vigyanm - Ayodhya Prasad Achal
3. Ayurvediya Padarth Vigyan - Ranjit Rai Deshai

- |  |  |
|--|--|
| 4. Ayurved Darshan                                     | - Acharya Rajkumar Jain                        |
| 5. Purusha Vichaya                                     | - Prof. V.J. Thakkar                           |
| 6. Ayurvediya Manas Vigyan                             | - Prof. Ram Harsh Singh                        |
| 7. Yoga evum Ayurved                                   | - Acharya Rajkumar Jain                        |
| 8. Basic principles of Ayurvediya Padartha Vigyan      | - Dr Yogesh Chandra Mishra                     |
| 9. Synopsis of Psychiatry                              | - Harold kaplon and Benjamin saddock           |
| 10. Oxford textbook of Psychiatry                      | - Michael Gerlder, Paul Harrison               |
| 11. General psychology and Abnormal psychology         | - S.K. Mangal                                  |
| 12. A text book of Post Graduate Psychiatry            | - Neeraj Ahuja                                 |
| 13. Mind in Ayurveda and other Indian Traditions       | - A.R.V.Murthy                                 |
| 14. Psychopathology in Indian medicine                 | - Satyapal Gupta                               |
| 15. Body- Mind-Spirit Integrative Medicine             | - Prof. Ram Harsh Singh                        |
| 16. Rationale of Ayurveda Psychiatry                   | - Dr. A.R.V. Murthy                            |
| 17. Foundations of contemporary Yoga and Yoga Therapy- | Prof. Ram Harsh Singh                          |
| 18. Stress and its Management                          | - Dr. K.N. Udupa                               |
| 19. Concept of Mind                                    | - Edited by Prof. C.R. Agnivesh, Kottakkal     |
| 20. Kayachikitsa                                       | - Part 3 by R. R. Pathak and Vidhyadhar Shukla |
| 21. Panchakarma Illustrated                            | - Prof. Shrinivasa Acharya                     |
| 22. Unified Dimensions of Ayurvedic Medicine           | - Dr. J.S. Tripathi                            |
| 23. Essential Psychiatry                               | - Bhatia MS                                    |
| 24. Sahassrayoga                                       | - Nishteswar and Vaidyanath                    |
| 25. Ayurveda and the Mind                              | - David Frawley                                |
| 26. Manasa Roga Vijnana                                | - Balakrishna                                  |
| 27. Comprehensive Textbook of Psychiatry               | - Kaplan and Sadock's                          |
| 28. Psychiatry for medical students                    | - Robert J Waldinger                           |
| 29. Introductions to Psychology                        | - Morgan / King.                               |

#### **Additional Books for Reference**

- |                    |                       |
|--------------------|-----------------------|
| 1. Concept of Mind | - Ed. Dr. C R Agnives |
| 2. Sahasrayogam    | - Dr. Prabhakara Rao  |

#### **2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

#### **2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

#### **2.13 Records**

Relevant records are to be maintained

#### **2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be

extended for six months or more in accordance with the time of submission of the synopsis to the University.

3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.

4. For approving the title a scrutiny Committee shall be constituted by the University.

5. The University should display the approved synopsis of dissertation on their website.

6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.

7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.

9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.

10. The dissertation shall consist critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.

11. The dissertation shall consist of not less than forty thousand words.

12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.

13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.

14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.

15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.

16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.

17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.

18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

**2.20 Journals**

**Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894

25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamy@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in/Open Access Peer Reviewed E-Journal*. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

## **3. EXAMINATIONS**

### **3.1 Eligibility to appear for examinations [including Supplementary]**

#### **A. Preliminary examination:**

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

#### **B. Final examination:**

For appearing final year examination 80 % attendance in each theory and practical subjects in 2 nd & 3 rd years separately is required

### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

#### **Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

#### **Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

### **SCHEDULE OF EXAMINATIONS**

- a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.
- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.

h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

### **CONDUCT OF EXAMINATION**

1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.
3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.  
The pattern is long essay for 20 marks -one question  
Short essay 10 marks - Eight questions  
Total 9 questions for 100 marks

#### **3.4 Papers in each year**

Given under clause No.2.10

#### **3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

#### **3.6 Model question paper for each subject with question paper pattern**

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Mano vigyana evam Manasa Roga)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe Prajnaparadha in detail. Write its role in the aetiopathogenesis of manasika rogas with suitable examples.

**Short Essays**

**(8x10=80)**

2. Explain Manovyaapara in detail
3. Write the diagnostic points mentioned in Ayurveda for the assessment of a psychiatric patient
4. Describe the Symptomatology and classification of Apasmara
5. Explain 'Personality disorders'
6. Discuss the concept of 'Bhootonmada'
7. Explain the types of Swapna and their role in psychopathogenesis
8. Explain dravya and adravya chikitsa in manasikaroga.
9. Write about Attention and Perception

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Mano vigyana evam Manasa Roga)  
(..... scheme)**

**Paper I – Manovyapara evam Manovigyanam**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe Manovyapara in detail

**Short Essays**

**(8x10 = 80)**

2. Explain the concept of manasabhava in sareerikaprakruti
3. Discuss Ahamkarikatwam and Annamayawam of mind
4. Write about the relation between atma and manas 1
5. Discuss the concept satyabudhi and upadha
6. Relate shadchakras with mind
7. Explain psychoneuroimmunoendocrinology
8. Discuss the concept of individuality of mind
9. Explain defense mechanism of mind

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Mano vigyana evam Manasa Roga)  
(..... scheme)**

**Paper II – Manovaiikariki evam Bhutavidya**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Discuss about bhutavidya and its relevance in modern world

**Short Essays**

**(8x10 = 80)**

2. Explain manasavega and how it leads to manovikara
3. How will you examine a psychiatric patient through Ayurveda?
4. Explain the importance of chidra in grahavesa
5. Write about the role of hereditary factors in psychiatry
6. Explain the concept Prajnaparadha in relation with manasikaroga`
7. Discuss about Anumanapareeksha told by Acharyacharaka
8. Explain the prognosis of manasikaroga
9. Discuss the legal and ethical issues in psychiatry

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Mano vigyana evam Manasa Roga)  
(..... scheme)**

**Paper III – Manas Roga Chikitsa**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Discuss about life style and stress related disorders and their management

**Short Essays**

**(8x10 = 80)**

2. Explain the role of ghritakalpna in manasikaroga
3. Discuss mood disorders and their ayurvedic co-relation and management
4. Explain the role of medhyarasyana in manasikaroga
5. How will you plan a treatment protocol for Madatyaya
6. Explain personality disorders and their management
7. Explain the mode of action of dhoopa and anjana in manasikaroga
8. Discuss atatwabhinivesa in detail 10 Marks
9. Briefly discuss about Psycho Pharmacology

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Mano vigyana evam Manasa Roga)  
(..... scheme)**

**Paper IV – Manasa Roga anya Chikitsa evam Yoga**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe the usage of principles of yoga in ayurvedic psychiatry

**Short Essays**

**(8x10 = 80)**

2. Discuss pathya-apathya in manasikaroga
3. Explain naishtikichikitsa in manasikaroga
4. Write about the role of Raktamokshana in ayurvedic psychiatry
5. Explain about Transactional analysis and its role in psychiatry
6. Discuss about Achararasayana
7. Explain the mode of action of Sirolepa and Murdhinitaila
8. Discuss about the recent advances in the field of psychiatry
9. Explain transcendental meditation and yoga nidra

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

**3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

### **4. INTERNSHIP**

Not applicable

### **5. ANNEXURES**

#### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study
7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman
8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.

12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

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## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Dhanvantari – Prasuti evam Stri Roga  
(M.S. (Ayurveda) - Obstetrics and Gynaecology)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Dhanvantari – Prasuti evam Stri Roga (M.S. (Ayurveda) – Obstetrics and Gynaecology)

### 2.2 Objectives:

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

## **2.9 Teaching learning methods**

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## **2.10 Content of each subject in each year**

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**

**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
- 5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati  
Aushadhi-yog Parikshana Paddhati  
Swastha, Atura Pariksha Paddhati  
Dashvidha Parikshya Bhava  
Tadvidya sambhasha, vadmarga and tantrayukti
- 6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**
- 7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

  - a. Panchamahabhuta and tridosha.
  - b. Concepts of rasa, guna, virya, vipak, prabhav and karma
  - c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.
- 8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.
- 9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
- 10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**
- 11. Introduction to latest Trends in Drug Discovery and Drug Development**
  - Brief information on the traditional drug discovery process
  - Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
  - Brief introduction to the process of Drug development.
- 12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies

Randomized Controlled Trials (RCT) & their types

Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies –

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
National Pharmacovigilance Programme for ASU drugs.
14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

1. Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
2. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
3. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
4. Measures of Central tendency – Mean, Median and Mode.
5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
6. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
7. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
8. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete

**9. Measures of Central tendency – Mean, Median and Mode.**

**10. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation**

**11. Non parametric methods: Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)**

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.  
Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:**  
Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography: computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics**

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

**PRACTICAL**

**100 Marks**

**Teaching hours – 120**

**I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and

	toxicology
5	Biochemistry (Clinical) Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
6	Clinical Pathology Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
7	Imaging Sciences Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
8	Clinical protocol development

## II. MEDICAL STATISTICS

**Practical hours - 20**

**Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.**

**Records to be prepared.**

**Distribution of marks (Practical):**

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

1. Aushotosh Kar "Pharmacognos & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
4. Kokate, CK., Purohit, AP, Gokhale, SB (2010). Pharmacognosy. Nirali Prakashan. Pune.
5. Kokate, CK., Khandelwal and Gokhale, SB (1996). Practical Pharmacognosy. Nirali Prakashan. Pune.

6. Trease G E and Evans W C, Pharmacognosy, Bailliere Tindall, Eastbourne, U K.
7. Tyler V C., Brady, L R., and Robers J E., Pharmacognosy, Lea and Febiger, Philadelphia.
8. Tyler VE Jr and Schwarting AE., Experimental Pharmacognosy, Burgess Pub. Co, Minneapolis, Minnesota.
9. Wallis- TE (2011)- reprint. Practical Pharmacognosy (Fourth Edition) Pharma Med Press, Hyderabad.
10. Wallis T E, Analytical Microscopy, J & A Churchill limited, London.
11. Wallis T E., Text Book of Pharmacognosy, J & A Churchill Limited, London.
12. WHO guidelines on good agricultural and collection practices- (GACP) for medicinal plants (2003).World Health Organization- Geneva.
13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
2. Brain, KR and Turner, TD. (1975). The Practical Evaluation Phytopharmaceuticals. Wright Scientechnica, Bristol.
3. Galen Wood Ewing (1985). Instrumental Methods of Chemical Analysis. McGraw- Hill College ; Fifth edition
4. Harborne, JB (1973). Phytochemistry Methods. Chapman and Hall, International Edition, London.
5. HPTLC- Fingerprint atlas of Ayurvedic Single Plant Drugs mentioned in Ayurvedic Pharmacopoeia Vol- III and IV. CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA. New Delhi.
6. Kapoor, RC (2010). Some observations on the metal based preparations in Indian System of Medicine. Indian Journal of Traditional Knowledge. 9(3): 562-575
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8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
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4. David Sultan (2003). Text book of Radiology and Imaging, Vol-1, 7th Edition.
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6. Harold Varley. Practical Clinical Bio-chemistry
7. Kanai L.Mukherjee. Clinical Pathology:, Medical Laboratory Technology Vol. I.Tata McGrawHill 1996, New Delhi.
8. Gradwohl, Clinical Laboratory-methods and diagnosis, Vol-I
9. Clinical Biochemistry -Sabitri Sanyal, Clinical Pathology, B.I.Churchill Livingstone (P) Ltd, New Delhi.2000.
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13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

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2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
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4. Bowling, A. (2002). Research Methods in Health (2nd ed). Buckingham: Open University Press.
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6. Cooray P.G. Guide to scientific and technical writing.
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12. Relevant portions of Ayurvedic Samhitas and other texts

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### **Biotechnology and Bio-informatics:**

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2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
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3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
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- Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
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  9. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
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  12. Rick J Turner and Todd A Durham (2008). Introduction to Statistics in Pharmaceutical Clinical trails. Published by the Pharmaceutical Press- An imprint of RPS Publishing, 1 Lambeth High Street, London SE1 7JN, UK
  13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
  14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
  15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana - A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.S.-AYURVEDA PRELIMINARY**

#### **PRASUTI EVAM STRI ROGA (Obstetrics and Gynaecology)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

**PART A**

**50 Marks**

1. Concept of Tridosha, Dhatu, Upadhatu, Agni, Pancha Mahabhuta in relation to Prasuti and Stri Roga.
2. Concept of Artava and Shukra.
3. Concept of Rasa, Guna, Veerya, Vipak and Karma of Dravya used in Prasuti and Stri Roga.
4. Action and adverse drug reaction related to commonly used plants and Rasa Aushadhi in Prasuti and Stri Roga.
5. Concept of Pathya- Apathya in relation to Prasuti and Stri Roga.
6. Concept of Garbhadhan and Garbha.
7. Concept of Vrana and Vrana dushti.
8. Concept of special therapies of Ayurved used in Prasuti and Stri Roga.
9. Concept of Ashtavidha Shastra Karma, Yantra & shastra used in Prasuti and Stri Roga

## PART B

50 Marks

1. Applied anatomy and physiology of genito-urinary system, abdomen, pelvis, pelvic floor, anterior abdominal wall, inguinal ligament, inguinal canal, vulva, rectum and anal canal.
2. Abnormal development, structure and function of female and male urogenital systems
3. Development, structure and function of placenta, umbilical cord and amniotic fluid.
4. Physiological and neuro-endocrinal changes during puberty, adolescence and menstruation.
5. Introduction of hormones related with gynaecology and obstetrics. Ovulation, fertilization, climacteric and menopause. Biophysical and biochemical changes in uterus and cervix during pregnancy and labour.
6. Pre-natal, Natal and Post natal counseling and examination.
7. Pharmacological study of drugs used in gynaecology and obstetrics.
8. Knowledge of diagnostic techniques used in gynaecology and obstetrics.
9. Basic Knowledge of pathological and biochemical investigation used in gynaecology and obstetrics.
10. Ethics, law and Acts Related to gynaecology and obstetrics – laws of abortion and adoption.
11. Knowledge of contraception and sterilization procedures.
12. Pre-operative and post operative care in gynaecology and obstetrics.

## PRACTICAL

100 Marks

### Contents:

1. Hospital duties in OPD, IPD, labor room, OT and casualty
2. History taking and counseling - 25 cases.
3. Labor cases - observation/performing - 10 cases
4. Knowledge of instruments required in gynecology and obstetrics practices.
5. Ayurvedic diagnostic and therapeutic procedures.
6. Fluid therapy and blood transfusion.
7. Contraception and sterilizations.
8. Pre-operative, operative and post operative procedures.

### Distribution of Marks:

- |   |                    |
|---|--------------------|
| 1. Case Records of Patients in detail (25 Cases)        | - 20 Marks         |
| 2. Bed side clinical case taking                        |                    |
| a. Long Case  | - 20 Marks         |
| b. Short Case   | - 10 Marks         |
| 3. Procedures   | - 15 Marks         |
| 4. Identification of instruments, X-ray, etc & Spotting | - 15 Marks         |
| 5. Viva-voce  | - 20 Marks         |
| <b>Total</b>  | <b>- 100 Marks</b> |

### Reference Books:-

1. Related matter from all the samhitas and their commentaries.
2. Prasuti tantra evum stree roga by Prof Tewari P V

3. Concepts of gynecology
4. Prasuti Tantra
5. Stree roga vigyan -
6. Navya prasuti Vigyan
7. Text book of gynaecology-
8. Text book of obstetrics-
9. Text book of obstetrics-
10. Text book of gynaecology -
11. Gabbe's normal and problem pregnancies.
12. Human embryology by
13. Jeffcoat's principles of gynaecology
14. Te linde's gynaecological surgery.

Dr Nirmala G Joshi.  
 Prof. M. Dwivedi  
 Dr VNK Usha  
 Dr Pooja Bharadwaja  
 Berek and Novak.  
 Williams  
 D C Dutta  
 D C Dutta  
 Saddler

### **Additional Books for Reference**

1. Prasoothi Thantram (English) Publication Division, Govt. Ayurveda College,  
Trivandrum
2. Sahasrayogam Dr. Prabhakara Rao

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### **M.S.- AYURVEDA FINAL YEAR**

#### **PRASUTI EVAM STRI ROGA (Obstetrics and Gynaecology)**

#### **PAPER - I**

#### **Garbhagarbhini Vigyan**

**100 Marks**

1. Applied anatomy of female Genito urinary system, pelvis and Pelvic floor. Pelvic assesment and foetal skull.
2. Physiology, neuro endocrinology and pathology of puberty and Neuroendocrine control of menstrual cycle.. Artava, Rituchakra, Streebija, Pumbija.
3. Garbha sambhava samaagri, Garbhadhanam, Pre-conceptional counseling and care, Pumsavana, Garbhasya shad dhatvatmakata, Garbhavakranti, Matrijadi bhava, Garbha vridhhi, role of panchamahabhutas in the formation and development of foetus. Garbhasya avayavotpatti, Fundamentals of reproduction – gamatogenesis, Fertilization, Implantation and early development of human embryo.
4. Apra, Garbhodaka Jarayu, Nabhinadi.  
Placenta, amniotic fluid, membranes and umbilical cord -their formation, structure, Functions and abnormalities.  
Garbha-poshana, Garbha shareerkriya vaishishtyam, Garbha lingotpatti, Garbha varnotpatti, Garbhasya masanumasika vridhhi.  
Foetal physiology, circulation, Foetal growth and development
5. Bija – Bijabhaga – Bijabhagavayava janya garbhanga vikruthi. Genetics, Birth defects and other teratologic abnormalities
6. Garbhini nidana, sapekshanidana, Garbhakalina matrigata parivartana, lakshana, Dauhrida. Diagnosis and differential diagnosis of pregnancy, anatomical and physiological changes during pregnancy, Endocrinology related to pregnancy, Immunology of pregnancy.

7. Garbhini paricharya, Masanumasika Pathya Apathya evum Garbha upaghatakara bhava. Ante Natal care, examination investigations and management,.
8. Garbhasankhya nirnay, Bahu apatyata, Multiple pregnancy.
9. Garbhavyapad - causes, clinical features, complications, management and treatment of Garbhasrava and Garbhapata , Upavishtaka, Nagodara / Upashushka, Lina garbha, Goodagarbha, Jarayu Dosha, Antarmrita garbha , Garbha shosha, Garbha kshaya, Bhutahrita garbha, Raktagulma.  
Abortions, I.U.G.R, Intrauterine Foetal death Ectopic pregnancy and gestational trophoblastic neoplasia,
10. Garbhini vyapad – nidana panchaka and chikitsa of garbhini vyapad.

Early recognition, differential diagnosis and prompt management of pregnancy complications, Emesis and Hyperemesis gravidarum, Anaemia, Pregnancy Induced Hypertension, Pre-eclampsia, Eclampsia, Antepartum hemorrhage, Rh- incompatibility. Management of pregnancies complicated by medical, surgical or Gynecological disorders in consultation with the concerned specialties by team approach

- a. Pyrexia, Heart disease, Diabetes mellitus, Liver disorders, Respiratory diseases, Renal diseases, Epilepsy, Hypertensive disorders.
- b. Fibroids, Ovarian tumors, Genital prolapse, Carcinoma Cervix.

Infections in pregnancy: Toxoplasmosis, Viral infections, Rubella, CMV, Hepatitis-B, Herpes, Syphilis and other Sexually Transmitted Infections including HIV, Prevention of mother to child transmission of HIV infection (PMTCT).

11. Jataharini related to garbhini avastha
12. Evaluation of Foetal and maternal health in complicated pregnancies by making use of diagnostic modalities.
13. Prenatal diagnosis of fetal abnormalities and appropriate care. PNDT Act and its implications.
14. Vishesh adhyayan of –  
Ashtanghriday sharira - Adhyay -1st – Garbhavkranti  
Sushrutasamhita sharira - Adhyay -3rd – Garbhavkranti  
Charak Samhita sharira - Adhyaya - 8th Jatisutriya

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## PAPER – II

## Prasava – Vigyan

100 Marks

### Prakrit prasav

1. Prasav paribhasha, Prasav kaal, Prasava prarambha karana, Prasava kalina garbha sthiti, Avi, Sutikagara.
  - a) Initiation and onset of parturition.
  - b) Examination and evaluation of patient in labour.
  - c) Physiology of labour.
  - d) Mechanism of labour.
  - e) Selection of place of delivery and labour room.
2. Prasava avastha evum paricharya
  - a) Stages of normal labour
  - b) Intrapartum maternal and foetal monitoring
  - c) Management of normal labour

**Prasava vyapad**

1. Etiopathogenesis, clinical features, prevention and management of Garbhasanga, vilambita prasav, Mudhagarbha and Aparasanga.
  - a. Prolonged labour
  - b. Cephalopelvic disproportions
  - c. Malpresentation
  - d. Obstructed labour
  - e. Methods of Induction and Augmentation of labour
2. Complications of different stages of labour
3. Obstetric management of high risk Pregnancies- Pre eclamptic toxemia, Eclampsia, Diabetes, cardiac disease, asthma, Epilepsy, ante partum haemorrhage, preterm premature rupture of membranes, Preterm, Post term, Multiple pregnancy, IUGR & HIV -AIDS
4. Still birth- diagnosis, complications and management.

**Jatamatra/ Navajata shishu paricharya**

1. Examination and management of neonate.
2. Management of birth asphyxia.
3. Detection of congenital malformation in newborn and timely referral for correction.

**Sutika vigyana**

1. Sutika Paribhasha, kala maryada, paricharya.
2. Sutika vyadhi and their chikitsa.
3. Stana sampat, Stanya utpatti, Stanya sampat, Stanya pariksha, Stanya vriddhi, kshaya and dusti karana, lakshan and its Chikitsa, stana shotha, stana vidhradhi.
4. Suppression of lactation
5. Normal and abnormal puerperium.

**Obstetric shock and management**

1. Raktadhana: blood transfusion and replacement of blood constituents.
2. Management of fluid and electrolyte imbalance in obstetrics.

**Drugs used in obstetric practice, indications/contraindications, doses and side effects.****Vishesha Adhyayana of –**

Ashtanga Hridaya Sharira Sthana 2nd Adhyaya – Garbha vyapad  
Sushruta Samhita Nidana Sthana 8th Adhyaya – Mudhagarbha nidana  
Sushruta Samhita Chikitsa Sthana 15th Adhyaya – Mudhagarbha Chikitsa

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**PAPER - III**

**Stree Rog vigyan**

**100 Marks**

**1. Disorders of menstruation and Female reproductive system.**

- A) Congenital malformations of female genital tract
- B) Artava dushti, artava vriddhi, artava kshaya, asrigdara, anartava, and kashtartav.
- C) Genital infections including sexually transmitted infections.
- D) Abnormal vaginal discharges.
- E) Arsha, Yonikanda, Gulma, Granthi, Arbuda.
- F) Abnormal uterine bleeding, Endometriosis, fibroid uterus, Adenomyosis, Polycystic ovarian syndrome and neoplasia of female genital organs.
- G) Endocrinological disorders affecting female reproductive system.
- H) Somarog.

2. **Detailed study of yoni vyapad mentioned by different Acharyas with their commentaries and all possible correlations with modern gynecological diseases.**

3. **Vandhyatva**

A) Hetu, Bheda, Pariksha, and Chikitsa. B) Detailed study of causative factors, Investigations with recent advances in management of infertility, Adoption law.

4. **Stanaroga**

Detailed study of Stanashotha, Stanakilaka and stanavidradhi, stana granthi, stanarbuda. Examination of breast, diagnosis and differential diagnosis of breast lump.

5. **Measures of contraception**

A) Ayurvedic view of Garbha nirodha and Garbhapatkara yogas.  
B) Temporary Contraception  
C) Recent studies in the field of contraception.  
D) National Health programme to improve maternal and Child health, social obstetrics and vital statistics (maternal and perinatal mortality).

6. **Sthanik chikitsa**

Detailed study of Pichu, Varti, Dhupan, Dhavana, Parisheka, lepa, Kalkadharana, Uttarabasti, agnikarma and kshara karma.

7. **Rajo Nirvritti** - Climacteric and menopause.

- Geriatric health care

8. **Study of modern diagnostic techniques and Investigations.**

9. **Important drugs used in Streerog.**

10. **Panchakarma in streerog**

11. **Vishesha Adhyayana of –**

Charaka Samhita Chikitsa Sthana – 30th Adhyaya - Yonivyapad Chikitsa  
Sushruta Samhita Uttara Tantra - 38th Adhyaya – Yonivyapad Pratishedha Kashyapa  
Samhita Kalpa Sthana - Shatapushpa Shatavari, Lashuna kalpa Adhyaya

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**PAPER – IV**

**Prasuti–Streerog-Shalya Karma**

**100 Marks**

General principles of Gynecological and Obstetric Surgeries. Analgesia and Anaesthesia in Obstetrics and Gynaec operative procedures.

**Operative Obstetrics**

Decision making, techniques, diagnosis and management of surgical complications.

Dilatation and evacuation, Hysterotomy, Provision of safe abortion services –selection of cases, technique and management of complications, septic abortion, criminal abortion, MTP Act.

Cervical encirclage.

Instrumental delivery (Forceps, vacuum extraction), Caesarean Section, Manual removal of Placenta, Caesarean Hysterectomy.

**Operative gynecology**

Selection of cases, technique and management of complications of minor and major gynecological procedures.

Dilatation and Curretage, Cervical cauterization.

Polypectomy, Myomectomy, Cystectomy, Oophorectomy.

Surgical sterilization procedures.

Hysterectomy.

Surgical procedures for genital prolapse. Surgical management of benign genital neoplasm.  
 Recent advances in Gynaecology and obstetrics – Diagnostic and therapeutics  
 Shock and its management, Blood Transfusion, Fluid and electrolyte imbalance, Fluid therapy.  
 Record keeping, ethical and legal issues involved in obstetrics and gynaecology.  
 Medico-legal aspects – ethics, communication and counselling in obstetrics and Gynecology  
 Intensive care in Obstetrics and Gynecology.

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### Content of Practical

1. Practical training to conduct
  - Normal and Complicated deliveries
  - Assisted/ Instrumental deliveries
  - Caesarean Section
  - Neonatal resuscitation
2. Practical knowledge of grabhini pricharya, sutika pricharya and masaanumasik garbha vridhhi.
3. Practical training to perform obstetrical and Gynaecological Surgery
4. Practical training to provide family welfare/ Planning services, safe abortion methods along with surgical sterilization.
5. Practical knowledge and practice of all relevant equipment, Procedures, complications, Emergencies with their management.
6. Practical knowledge of Yogasanas and pranayam useful in Stree rog and Prasuti tantra.
7. Practical knowledge of Panchakarma and Sthanik Chikitsa used in Stree Rog and Prasuti Tantra.
8. Practical Knowledge of recent advances in Gynaecology and obstetrics.

### Pattern of practical examination

1. Practical Record Book	- 10 Marks
2. Bed side examination	
a. Long Case	- 20 Marks
b. Short Case	- 10 Marks
3. Identification of the Instruments/X-ray/USG plate	- 10 Marks
4. Thesis Presentation	- 25 Marks
5. Viva-voce	- 25 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:

1. Related matter from all the samhitas and their commentaries.
2. Prasuti tantra evum stree roga by Prof Tewari P V
3. Concepts of gynecology Dr Nirmala G Joshi.
4. Prasuti Tantra Prof. M. Dwivedi
5. Stree roga vigyan - Dr VNK Usha
6. Navya prasuti Vigyan Dr Pooja Bharadwaja
7. Text book of gynaecology- Berek and Novak.
8. Text book of obstetrics- Williams

- |   |           |
|---|-----------|
| 9. Text book of obstetrics-                 | D C Dutta |
| 10. Text book of gynaecology -              | D C Dutta |
| 11. Gabbe's normal and problem pregnancies. |           |
| 12. Human embryology by                     | Saddler.  |
| 13. Jeffcoat's principles of gynaecology    |           |
| 14. Te linde's gynaecological surgery.      |           |

#### **Additional Books for Reference**

- |                                 |   |
|---------------------------------|---|
| 1. Prasoothi Thantram (English) | Publication Division, Govt. Ayurveda College,<br>Trivandrum |
| 2. Sahasrayogam                 | Dr. Prabhakara Rao  |

#### **2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

#### **2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

#### **2.13 Records**

Relevant records are to be maintained

#### **2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.
3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.
4. For approving the title a scrutiny Committee shall be constituted by the University.
5. The University should display the approved synopsis of dissertation on their website.
6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.
7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.

9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.

10. The dissertation shall consist critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.

11. The dissertation shall consist of not less than forty thousand words.

12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.

13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.

14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.

15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.

16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.

17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.

18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

## 2.20 Journals

### Print

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamy@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

### E-Journals

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068

3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in*/Open Access Peer Reviewed E-Journal. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

## **3. EXAMINATIONS**

### **3.1 Eligibility to appear for examinations [including Supplementary]**

#### **A. Preliminary examination:**

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

#### **B. Final examination:**

For appearing final year examination 80 % attendance in each theory and practical subjects in 2<sup>nd</sup> & 3<sup>rd</sup> years separately is required

### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

#### **Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

#### **Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

- II Regular clinical training in the hospital for student of clinical subject.
- III Practical training of research work carried out in the department, for student of non clinical subject.
- IV Active participation in various seminars, symposia and discussions.
- V Finalization of topic of dissertation and synopsis.
- VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

### **SCHEDULE OF EXAMINATIONS**

- a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.
- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

### **CONDUCT OF EXAMINATION**

- 1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
- 2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.
- 3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.  
The pattern is long essay for 20 marks -one question  
Short essay 10 marks - Eight questions  
Total 9 questions for 100 marks

**3.4 Papers in each year**

Given under clause No.2.10

**3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

**3.6 Model question paper for each subject with question paper pattern**

**QP CODE: .....**

**Register No.....**

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Prasuti evam Stri Roga)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Define and describe different aspects of 'Arthavam'. Describe ovulatory cycle and Diagnosis of ovulation.

**Short Essays**

**(8x10=80)**

2. Explain in detail the applied aspects of influence of 'Panchamahabhuta' and shad Bhavas on the development of human embryo.
3. Describe 'Garbha Poshanam at different stages of development of garbham.
4. Write in detail the 'garbhopaghatakarabhavas' and its effect on developing foetus.
5. Describe 'Garbha sangha' and its management.
6. Describe the clinical features of Stanarbuda and its management.
7. Describe the clinical features of Vatiki and Paitiki along with management.
8. Describe 'Garbhasayamukha dehanam'.
9. Describe 'Vandhyakarana shastrakarma'.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Prasuti evam Stri Roga)  
(..... scheme)**

**Paper I – Garbhagarbhini Vigyan**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe the causes and investigations of repeated pregnancy loss with Ayurvedic correlation and discuss the role of jataharinis.

**Short Essays**

**(8x10 = 80)**

2. Discuss beeja,beejabhaga and beejabhagavayava in relation to congenital anomalies.
3. Describe maternal physiological adjustments to pregnancy.
4. Write diagnosis and complications of gestational diabetes and discuss Ayurvedic management.
5. Describe the role of ultrasound scan in the diagnosis of foetal abnormalities.
6. Discuss the importance of garbhini paricharya in the outcome of labour.
7. Discuss and compare etiology, diagnosis and management of Upavishtaka, Nagodara and Leena garbha.
8. Write the importance of pelvic dimensions in obstetrics.
9. Describe diagnosis and complications of bahu apatyata.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Prasuti evam Stri Roga)  
(..... scheme)**

**Paper II – Prasava – Vigyan**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe maternal and foetal monitoring of different stages of labour.

**Short Essays**

**(8x10 = 80)**

2. Write sootikaparicharya and discuss its significance.
3. Explain mechanism of labour and diagnosis of occipito posterior positions.
4. Define PPH and write causes, diagnosis and management.
5. Write methods of resuscitation of new born baby.
6. Briefly explain the types of abnormal uterine action.
7. Write causes, clinical features and management of Vilambita Prasava
8. Write diagnosis, complications and management of stillbirth.
9. Describe the physiology of lactation .Write stanya dushti lakshana with management.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Prasuti evam Stri Roga)  
(..... scheme)**

**Paper III – Stree Rog vigyan**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe nidana, lakshana and samprapti of conditions with excessive uterine bleeding. Discuss the significance of modern investigation procedures in diagnosis and management

**Short Essays**

**(8x10 = 80)**

2. Write clinical features, investigations and management of Vatiki.
3. Describe the Ovarian factors of infertility.
4. Discuss supports of uterus and outline management of mahayoni.
5. Write causes, investigations and management of karnini.
6. Discuss the role of Ayurveda in the prevention and management of sexually transmitted diseases.
7. Describe indications and procedure of uttaravasthi and discuss the benefits of uttaravasthi prayoga of any two oushadha yogas in specific stree rogas.
8. Write differential diagnosis and investigations of a lower abdominal mass in a female of reproductive age.
9. Write clinical features of post-menopausal syndrome and discuss its management.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Prasuti evam Stri Roga)  
(..... scheme)**

**Paper IV – Prasuti–Streerog-Shalya Karma**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe indications, procedure, and complications of lower segment caesarean section with pre and post-operative care.

**Short Essays**

**(8x10 = 80)**

2. What is the regional anaesthesia techniques used in gynaecological surgery? Explain briefly.
3. Describe indications and procedure of manual removal of retained placenta.
4. Write methods and complications of induction of labour.
5. Describe surgical management of dysfunctional uterine bleeding.
6. Describe procedure of vaginal hysterectomy.
7. Write indications, contraindications and complications of myomectomy.
8. Write indications, procedure and complications of cone biopsy of cervix.
9. Write prerequisites for forceps delivery and describe procedure of outlet forceps delivery.

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

**3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4

examiners out of which one should be external from out of the state. The examiners should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

### **4. INTERNSHIP**

Not applicable

### **5. ANNEXURES**

#### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended

for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study
7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman
8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.

12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

\*\*\*\*\*



## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Dhanvantari – Shalya  
(M.S. (Ayurveda) - Surgery)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Dhanvantari – Shalya (M.S. (Ayurveda) – Surgery)

### 2.2 Objectives:

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

### 2.9 Teaching learning methods

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## **2.10 Content of each subject in each year**

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**  
**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

#### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

#### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

#### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

#### **4. Scientific writing and publication skills.**

- a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
- b. Different types of referencing and bibliography.
- c. Thesis/Dissertation: contents and structure
- d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)

**5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati

Aushadhi-yog Parikshana Paddhati

Swastha, Atura Pariksha Paddhati

Dashvidha Parikshya Bhava

Tadvidya sambhasha, vadmarga and tantrayukti

**6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**

**7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

a. Panchamahabhuta and tridosha.

b. Concepts of rasa, guna, virya, vipak, prabhav and karma

c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.

**8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.

**9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).

**10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**

**11. Introduction to latest Trends in Drug Discovery and Drug Development**

-Brief information on the traditional drug discovery process

-Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology

-Brief introduction to the process of Drug development.

**12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies  
 Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies  
 Randomized Controlled Trials (RCT) & their types  
 Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.  
 Errors and bias in research.  
 New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)  
 Phases of Clinical studies: 0,1,2,3, and 4.  
 Survey studies –  
 Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
 National Pharmacovigilance Programme for ASU drugs.
14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
 Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

1. Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
2. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
3. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
 Types of variables – Continuous, discrete, dependent and independent variables.  
 Type of series – Simple, Continuous and Discrete
4. Measures of Central tendency – Mean, Median and Mode.
5. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
6. Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
7. Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
8. Scales of Measurements- nominal, ordinal, interval and ratio scales.  
 Types of variables – Continuous, discrete, dependent and independent variables.  
 Type of series – Simple, Continuous and Discrete
9. Measures of Central tendency – Mean, Median and Mode.

**10. Variability:** Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation

**11. Non parametric methods:** Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.

Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:** Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography:** computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

### **PRACTICAL**

**100 Marks**

**Teaching hours – 120**

### **I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and

	toxicology
5	Biochemistry (Clinical) Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1c, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
6	Clinical Pathology Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
7	Imaging Sciences Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
8	Clinical protocol development

## II. MEDICAL STATISTICS

**Practical hours - 20**

**Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.**

**Records to be prepared.**

**Distribution of marks (Practical):**

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

1. Aushotosh Kar "Pharmacognosy & Pharmacobiotechnology" New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
4. Kokate, CK., Purohit, AP, Gokhale, SB (2010). Pharmacognosy. Nirali Prakashan. Pune.
5. Kokate, CK., Khandelwal and Gokhale, SB (1996). Practical Pharmacognosy. Nirali Prakashan. Pune.

6. Trease G E and Evans W C, Pharmacognosy, Bailliere Tindall, Eastbourne, U K.
7. Tyler V C., Brady, L R., and Robers J E., Pharmacognosy, Lea and Febiger, Philadelphia.
8. Tyler VE Jr and Schwarting AE., Experimental Pharmacognosy, Burgess Pub. Co, Minneapolis, Minnesota.
9. Wallis- TE (2011)- reprint. Practical Pharmacognosy (Fourth Edition) Pharma Med Press, Hyderabad.
10. Wallis T E, Analytical Microscopy, J & A Churchill limited, London.
11. Wallis T E., Text Book of Pharmacognosy, J & A Churchill Limited, London.
12. WHO guidelines on good agricultural and collection practices- (GACP) for medicinal plants (2003).World Health Organization- Geneva.
13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
2. Brain, KR and Turner, TD. (1975). The Practical Evaluation Phytopharmaceuticals. Wright Scientechnica, Bristol.
3. Galen Wood Ewing (1985). Instrumental Methods of Chemical Analysis. McGraw- Hill College ; Fifth edition
4. Harborne, JB (1973). Phytochemistry Methods. Chapman and Hall, International Edition, London.
5. HPTLC- Fingerprint atlas of Ayurvedic Single Plant Drugs mentioned in Ayurvedic Pharmacopoeia Vol- III and IV. CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA. New Delhi.
6. Kapoor, RC (2010). Some observations on the metal based preparations in Indian System of Medicine. Indian Journal of Traditional Knowledge. 9(3): 562-575
7. Khopkar, S. M. Analytical Chemistry, New Age International Publishers , 3 rd edition
8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
9. Mahadik KR, Bothara K G. Principles of Chromatography by, 1st edition, Nirali Prakashan.
10. Qadry JS and Qadry S Z., Text book of Inorganic Pharmaceutical and Medicinal Chemistry, B. S. Shah Prakashan, Ahmedabad.
11. Quality Control Methods for Medicinal Plant Material. Reprint (2002). WHO Geneva.
12. Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
15. Stahl E., Thin Layer Chromatography - A Laboratory Handbook, Springer Verlag, Berlin.

16. Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo and Dev Dutt Rakesh (2008). Extraction Technologies for Medicinal and Aromatic Plants INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste

### **Biochemistry and Laboratory techniques:**

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
3. David Frifelder. W. H. Freeman. (1982). Physical Biochemistry by; 2 edition
4. David Sultan (2003). Text book of Radiology and Imaging, Vol-1, 7th Edition.
5. Deb, A.C., Fundamentals of Biochemistry, Books and Allied (P) Ltd, 2002.
6. Harold Varley. Practical Clinical Bio-chemistry
7. Kanai L.Mukherjee. Clinical Pathology:, Medical Laboratory Technology Vol. I.Tata McGrawHill 1996, New Delhi.
8. Gradwohl, Clinical Laboratory-methods and diagnosis, Vol-I
9. Clinical Biochemistry -Sabitri Sanyal, Clinical Pathology, B.I.Churchill Livingstone (P) Ltd, New Delhi.2000.
10. Satyanarayanan,U. Essentials of Biochemistry, Books and allied(P) Ltd.2002
12. Zubay, G.L. Biochemistry, W.M.C. Brown Publishers, New York 1998.
13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
3. Altick and Fenstermaker. (2007). *The Art of Literary Research*. 4th ed. W. W. Norton. Castle, Gregory. *Blackwell Guide to Literary Theory*. Blackwells,
4. Bowling, A. (2002). Research Methods in Health (2nd ed). Buckingham: Open University Press.
5. Day R.A. How to write a scientific paper. Cambridge University Press.
6. Cooray P.G. Guide to scientific and technical writing.
7. Deepika Chawla and Neena Sondhi. (2011). Research Methods- Concepts and cases. New Delhi: Vikas Publishing House.
8. Greenhalgh, T. (2006) How to Read a Paper: The Basics of Evidence-Based Medicine. (3rd ed) Blackwell
9. Kothari - CR (2004). Research Methodology- Methods and Techniques (Second Revised Edition). New Age International Publishers- New Delhi.
10. Kumar, R. 2005. *Research Methodology: a Step-by-Step Guide for Beginners*, 2<sup>nd</sup> ed. Thousand Oaks, CA, London: Sage Publications.
11. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
12. Relevant portions of Ayurvedic Samhitas and other texts

### **Drug research and development:**

1. RICK NG, (2009). DRUGS-from discovery to approval. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
3. Jagdeesh, Sreekant Murthy, Gupta, YK and Amitabh Prakash Eds. Biomedical Research (From Ideation to Publication) (2010). Wolters Kluwer/ Lippincott Williams and Wilkins.
4. WHO Guidelines on Safety Monitoring of herbal medicines in pharmacovigilance systems. (2004). WHO- Geneva. ISBN 92 4 1592214.
5. Natural products isolation. (2006) 2nd ed. / edited by Satyajit D. Sarker, Zahid Latif, Alexander I. Gray. (Methods in biotechnology; 20). Includes bibliographical references and index. Humana Press Inc. ISBN 1-58829-447-1 (acid-free paper) – ISBN 1-59259-955-9 (eISBN)
6. Gazette Extraordinary Part- II-Section 3 - Sub section (i) December 2008. Govt of India. AYUSH Guidelines on safety studies- Rule 170 of Drugs and Cosmetics Act.
7. OECD (2000) Guidance Document on Acute Oral Toxicity. Environmental Health and Safety Monograph Series on Testing and Assessment No 24.
8. OECD Guideline for the Testing of Chemicals – Repeated Dose 90-day Oral Toxicity Study in Rodents, 408, 1998.  
<http://browse.oecdbookshop.org/oecd/pdfs/free/9740801e.pdf>(latest version)
9. OECD Series on Principles of Good Laboratory Practice (GLP) and Compliance Monitoring, 1998.  
[http://www.oecd.org/document/63/0,2340,en\\_2649\\_34381\\_2346175\\_1\\_1\\_1,00.html](http://www.oecd.org/document/63/0,2340,en_2649_34381_2346175_1_1_1,00.html)
10. ICH Harmonised Tripartite Guideline (2000). Maintenance of the ICH Guideline on Non-clinical Safety Studies for the conduct of Human Clinical Trials for Pharmaceuticals M3 (R1).
11. Ghosh M.N.: Fundamentals of Experimental Pharmacology, *Scientific Book Agency. Bombay.*
12. Jaju B.P.: Pharmacological Practical Exercise Book, *Jaypee Brothers, New Delhi.*
13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
14. Ravindran R.: X-Pharm (Software), Indian Journal of Pharmacology, *JIPMER, Pondicherry.*

### **Biotechnology and Bio-informatics:**

1. Angela M. Meireles A (2009). Extracting Bioactive compounds for food products. Theory and applications. CRC- Press Taylor and Francis Group.
2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978- 81-8318-831-9
4. Lesk, A.M. Introduction to Bioinformatics Oxford 2002.

5. Satyanarayana, U.: Biotechnology, Books and Allied (P) Ltd, Kolkata, 2005
6. Setubal J. C and J. Meidanis, Introduction to Computational Molecular Biology, PWS Publishing Company, 1997.
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8. <http://www.zygogen.com>.
9. <http://www.dsir.nic.in/reports/tifp/database/metallo.pdf>.
10. [www.consort-statement.org](http://www.consort-statement.org)
11. [www.strobe-statement.org](http://www.strobe-statement.org)
12. [www.icmr.nic.in](http://www.icmr.nic.in)

### **Clinical Evaluation:**

1. CDSCO, Good Clinical Practices For Clinical Research in India, Schedule Y (Amended Version – 2005), <http://cdsco.nic.in/html/GCP1.html>
2. Ethical Guidelines for Biomedical Research on Human subjects. (2000). Indian Council of Medical Research- New Delhi.
3. Gallo P., Chuang-Stein C., Dragalin V., Gaydos B., Krams M., Pinheiro J. Adaptive Designs in Clinical Drug Development—An Executive Summary of the PhRMA Working Group. *Journal of Biopharmaceutical Statistics*. 16: 275–283; 2006
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9. William C. Scheffer Introduction to Clinical Researchs

### **Medical Statistics:**

1. Armitage, P. and Berry, G. (1994) Statistical Methods in Medical Research (3rd ed). Blackwell Science.
2. Armitage P, Berry G, Matthews JNS: *Statistical Methods in Medical Research*. Fourth edition. Oxford, Blackwell Science Ltd; 2002
3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
4. Bradford Hill – Basic Medical Statistics
5. Cambell, M.J. and Machin, D. (1993) Medical Statistics: A Common Sense Approach (2nd ed). Chester: Wiley.
6. Dwivedi S. N., Sundaram K. R and V. Sreenivas (2009). Medical Statistics -

- Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
7. Gupta S.P. - Fundamentals of statistics, Sultan Chand. Delhi.
8. Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India
9. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
10. Mehdi, B and Prakash A. (2010). Biostatistics in Pharmacology. Practical Manual in experimental and clinical pharmacology. 1st Edition. New-Delhi: Jaypee brothers Medical Publishers
11. Rao, NSN and Murthy, NS. (2008) 2nd Edition. Applied statistics in health sciences. Jaypee Brothers Medical Publishers (P) Ltd. Bengaluru, New Delhi.
12. Rick J Turner and Todd A Durham (2008). Introduction to Statistics in Pharmaceutical Clinical trails. Published by the Pharmaceutical Press- An imprint of RPS Publishing, 1 Lambeth High Street, London SE1 7JN, UK
13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana - A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.S.-AYURVEDA PRELIMINARY**

#### **SHALYA (Surgery)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

**PART A**

**50 Marks**

1. Etymology, Definition, Scope and Importance of Shalya Tantra.
2. Study of Sushruta Samhita Sutra Sthana from 1st to 29th chapter.
3. Study of modern surgical clinical methodology.
4. Applied anatomy, physiology and surgical pathology of common surgical conditions including relevant Ayurvedic aspects.
5. Applied aspect of Shat Kriyakala in the pathogenesis of surgical diseases.
6. Applied aspect of Prakriti in understanding the causes and role of treatment in surgical diseases.
7. Applied aspect of basic principles of Ayurveda in Rogi Pariksha (Trividha, Shadvidha, Ashtavidha and Dashavidha Pariksha).
8. Concept and applied aspect of Sadhya-Asadhya (Prognosis) - Arishtha lakshana.

9. Marma Sharira – Etymological derivation, definition, basic concept of Marma, origin, classification, Pramana. Consequences of Marmaghata and their management.
10. Concept of Shock - Its varieties, etiopathogenesis and management – Cardio-pulmonary resuscitation (CPR), Endo-tracheal intubation and Tracheostomy. Drug reactions and Anaphylaxis – Management.
11. Basics of Fluid, Electrolyte, Acid Base Balance and Nutrition
12. Antibiotics, Analgesics, Anti-inflammatory and Emergency drugs in surgical practice.
13. Surgical Emergency conditions and its management.
14. Sushruta's concept of Rakta. Raktasrava – Haemorrhage – Types, Patho-physiology, clinical features and management. Concept of Raktastambhana – Haemostasis. Bloodtransfusion – Indications, blood groups, components, compatibility and complications with management.
15. Medico-legal aspects in Surgery. Knowledge of documentation and record keeping.

## **PART B**

**50 Marks**

16. Knowledge of ancient and recent Yantra and Shastra – Surgical instruments and their application in surgical practice.
17. Asepsis and Antisepsis. Sterilisation (Nirjivanukaran) - methods and types.
18. Surgical infections – Sepsis, Cellulitis, Erysipelas, Tetanus, Gas gangrene. Handling and care of HIV and Hepatitis positive patients. Knowledge of conditions like Bacteraemia, Septicaemia, Toxaemia and Pyaemia
19. Sangyahan / Anesthesiology - Types, methods, indications, contraindications, complications and its management.
20. Trividha Karma – Purva, Pradhan and Pashchat Karma. Modern principles of pre-operative and post-operative care.
21. Ashtavidha Shastra Karmas.
22. Bandhana Karma – Recent advances.
23. Kshara Karma – Introduction, types, method of various preparations like Kshara, Kshara Varti, Kshara Pichu and applications.
24. Kshara Sutra – Method of preparation, standardization and applications.
25. Agnikarma – Introduction, types and applications.
26. Raktamokshana – Introduction, types and applications.
27. Application of Panchakarma therapy in surgical practice.
28. Scope of Pathya-Apathya in the management of surgical diseases.

## **PRACTICAL**

**100 Marks**

### **Contents:**

1. Hospital duties in OPD, IPD, OT and Casualty.
2. Case record – 50 cases.
3. Surgical cases – Observing/Assisting/Performing - 50 cases.
4. Knowledge of instruments required in surgical practices.
5. Ayurvedic and Modern diagnostic and therapeutic procedures.
6. Fluid therapy and blood transfusion.
7. Contraception and sterilizations.
8. Pre-operative, operative and post operative procedures.
9. Practical training of local Anaesthesia.

10. Interpretation of Imaging techniques.
11. Practical knowledge of Yogya vidhi – Experimental surgery and Simulators.

**Distribution of Marks:**

1. Presentation of related Research work like Synopsis and Case record	- 20 Marks
2. Bedside clinical case taking-	
Long case	- 20 Marks
Short case	- 10 Marks
3. Identification of instruments, X-ray etc	- 10 Marks
4. Demonstration of Surgical and Parasurgical Procedure	- 10 Marks
5. Viva voce	- 30 Marks
<b>Total</b>	<b>- 100 Marks</b>

**Reference Books:-**

1. Sushruta Samhita
2. Ashtanga Sangraha
3. Ashtanga Hridaya
4. Charaka Samhita
5. The Surgical instruments of the Hindus - Girindranath Mukhopadhyaya
6. Shalya Tantra Samuchchaya - Pandit Ramadesh Sharma
7. Shalya Vigyan (Part 1-2) - Dr. Surendra Kumar Sharma
8. Shalya Samanvaya (Part 1-2) - Vd. Anantaram Sharma
9. Shalya Pradeepika - Dr. Mukund Swaroop Verma
10. Sushruti - Dr. Ram Nath Dwivedi
11. Clinical Shalya Vigyan - Dr. Akhilanand Sharma
12. Bhagya Chikitsa - Dr. Prabhakar Janardhan Deshpande
13. Kshara sutra management in anorectal ailments - Dr. S.K. Sharma, Dr. K.R.Sharma and Dr. Kulwant Singh.
14. A manual on Fistula-in-ano and Ksharasutra Therapy – Dr. Manoranjan Sahu
15. Recent trends in the management of Arshas / Haemorrhoids - Dr. P. Hemantha Kumar
16. Anorectal diseases in Ayurveda - Dr. Sizoria and Dr. Praveen
17. Adhunik Shalya Chikitsa Siddhanta - Dr. Katil Narshingham Udupa
18. Agnikarma Technology Innovation - Dr. P.D. Gupta
19. Shalya Tantra Ke Siddhant - Dr. K.K.Takral
20. Arsha Evum Bhagander Mein sutra Avacharan - Vd. Kanak Prasad Vyas
21. Recent advances in Kshara Sutra - Dr. M. Bhaskar Rao
22. Leech application in Ayurveda - Dr. M. Bhaskar Rao
23. Kshara Sutra - Dr. S.N.Pathak
24. Text book of Shalya Tantra (Ayurvedic Surgery) - Dr. P. Hemantha Kumar
25. Shalya Shalakya Tantra - Vd. S.G. Joshi
26. Surgical ethics of Ayurveda - Dr. D.N. Pande
27. Anushastra Karma - Dr. D.N. Pande
28. Concept of Vrana in Ayurveda - Dr. Lakshman Singh

29. Significance for Poorva Karma in Surgical Patient - Dr. Lakshman Singh
30. Sangyahan Prakash - Dr. D.N. Pande
31. Marma Science and Principles of Marma Therapy – Dr. Sunil Kumar Joshi
32. Recent trends in the management of Bhagandara / Fistula-in-ano - Dr. P. Hemantha Kumar
33. Principles and Practice of Agnikarma - Dr. Anand Kumar and Dr. Kanchan Shekokar.
34. Shalya Vigyan (Sachitra) - Anantram Sharma
35. Text book of Surgery - Sabistan
36. Operative Surgery – Rob and smith
37. Bailey and Love’s Short Practice of Surgery - Norman.S. Williams, Charles.V. Mann and R.C.G. Russell
38. Text books of Operative Surgery - Farquharson’s
39. Principles of Surgery - Schwartz
40. Emergency Surgery - Hamilton Bailey’s
41. Manipal Manual of Surgery - Dr. Rajgopal Shenoy
42. SRB’s Manual of Surgery - Sriram Bhat M
43. Surgery of the Anus, Rectum and Colon - John Goligher
44. Surgical pathology - Willing Worth
45. Clinical methods in surgery - S. Das
46. Textbook of Operative Surgery - S. Das
47. A concise Text Book of Surgery - S. Das
48. A manual on Clinical Surgery - S. Das
49. A System of Surgical Diagnosis - T.N. Patel
50. Clinical Anatomy/ Surgical Anatomy - John E.Skandalakis
51. A Practical Guide to Operative Surgery - S. Das
52. Manual of Surgical Instruments - M.M. Kapur
53. Ward Procedures - Patel Mansukh. B
54. Drugs and Equipment for Anaesthesia - Arun kumar
55. Primary Anaesthesia - Maurice King
56. Synopsis of Anaesthesia - Lee
57. Outline of Orthopedics - John Crawford Adams and David Hamblen. L
58. Fractures and Joint Injuries - Watson-Jones
59. Outline of Fracture - John Crawford Adams

#### **Additional Books for Reference**

1. Anorectal Disorders Ayurvedic Approach - Dr. Rajasree
2. Ayurveda for Low Backache - Dr. Rajasree

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## M.S.- AYURVEDA FINAL YEAR

### SHALYA (Surgery)

#### **PAPER – I Shalya Tantra Vangmaya – Literature, Research and Development 100 Marks**

1. Thorough study of the Sushruta Samhita including other relevant portions of Brihatrayee and Laghutrayee.
2. Knowledge and importance of Surgical Audit and Research.
3. Medico legal issues – Understanding the implications of acts of omission and commission in practice. Issues regarding Consumer Protection Act, medical profession, national health policy - Implications in a medico-legal case like accidents, assaults etc.
4. Surgical ethics including Informed consent.
5. Yogya Vidhi – Practical and Experimental training on different types of Surgical Models for Research in Surgery.
6. Clinical and diagnostic methods in Shalya Tantra - X-rays, U.S.G., Endoscopies (for diagnostic and treatment purposes), MRI, CAT scanning and other recent diagnostic tools.
7. Concept of Sandhana Karma – Plastic reconstructive and cosmetic surgery. Fundamentals of Sandhana Karma –
  - i. Karna Sandhana – Auroplasty
  - ii. Nasa Sandhana – Rhinoplasty
  - iii. Ostasandhana – Cheiloplasty
  - iv. Grafts and Flaps – Techniques and applications.
  - v. Vascular anastomosis and grafts.
8. Recent development on Sushruta's surgical principles and practices.

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#### **PAPER – II**

#### **Shalya Tantra Vigyan**

**100 Marks**

1. Vrana – Wound management
  - i. Management of Nija Vrana, Dushta Vrana and Nadi Vrana.
  - ii. Vrana Chikitsa – Shasti upakramas, Pathya-apathya.
  - iii. Wound and Ulcer.
  - iv. Dagdha Vrana – Burns, scalds, Dhumopaghata, Ushnavata, Frost bite, electric burns and their management.
  - v. Prameha Pidaka – Diabetic carbuncle, Diabetic wound and its management.
  - vi. Kotha – Gangrene and Principles of Amputation.
  - vii. Sadyo Vrana - Traumatic wounds – Nidana, Prakara, Lakshana, Upadrava and Chikitsa, Bites and stings and its management.
2. Pranasta Shalya – Diagnosis and management.
3. Vranashopha-Inflammation, Vidradhi – Abscesses and Pidika – Boils.
4. Granthi – Cyst and Arbuda – Benign and malignant Neoplasm.
5. Bhagha - Classification, Clinical features, Complications and Management.
6. Sandimoksha – Classification, Clinical features, Complications and Management.

7. Udara Roga - Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and Management.
8. Gulma Roga - Nidana, Prakara, Lakshana, Upadrava and Chikitsa.
9. Shoola vyadhi - Nidana, Prakara, Lakshana, Upadrava and Chikitsa.
10. Diseases of Rectum and Anal Canal – Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and Management of Arshas, Parikartika, Bhagandara, Guda Vidradi, Gudabhramsa and Sanniruddaguda.
11. Ashmari - Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and Management.
12. Mutraghata and Mutrakrichhra - Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and Management.
13. Niruddhaprakasha - Phimosis, Parivartika – Paraphimosis and Avapatika - Prepuceal ulcer.
14. Vriddhi Roga - Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and Management.

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**PAPER - III**

**Adhunik Shalya Karma - Modern Surgery**

**100 Marks**

1. Fundamentals of modern surgery and treatment of surgical disorders including surgical anatomy, physiology and pathology.
2. Diagnosis and Surgical treatment of head and spine injury, thoracic trauma and abdominal trauma. Blast injuries and Management.
3. Diagnosis and surgical measures for disorders of Artery, Vein, Ligaments, Muscles and Tendons.
4. Diagnosis and Surgical management of neck disorders e.g. salivary glands, thyroid, Thyroglossal cyst and Fistula, Branchial cyst and fistula, Cystic hygroma and Lymphadenopathies.
5. Diagnosis and Surgical management of breast diseases, Benign and Malignant breast tumours.
6. Diagnosis and Surgical measures of diseases of Gastrointestinal system -
  - i. Oral cavity - Oral ulcers, Oral cancer, Precancerous conditions, Submucosal fibrosis, Leukoplakia, Cleft lip and palate, Lip tumours, Mucosal cyst, Nasopharyngeal cancer, Tongue ulcer and cancer.
  - ii. Oesophagus - Oesophageal varices, Dysphagia, Neoplasm, Strictures and Gastro oesophageal reflux.
  - iii. Stomach and duodenum – Congenital anomalies, Injuries, Inflammation, Ulcer, Neoplasm, Pyloric stenosis, Acute dilatation, Hiatus hernia and Foreign bodies.
  - iv. Pancreas - Congenital anomalies, Acute and Chronic pancreatitis, Calculi Neoplasm and Cysts of pancreas.
  - v. Peritoneum, Omentum, Mesentery, Retroperitoneal Space – Peritonitis, Abscess, Neoplasm, Mesenteric cyst, Torsion of mesentery, Vascular thrombosis, Retroperitoneal cyst and Fibrosis.
  - vi. Abdominal mass - Diagnosis and Management.
  - vii. Small intestine - Congenital anomalies, Inflammation, Ulcer, Neoplasm, Stenosis, Injuries, Foreign bodies, Diverticuli, Peutz-jeghers syndrome, Chron's disease,

- Carcinoid tumours, Enteric perforation and Intestinal fistula.
- viii. Large intestine - Congenital anomalies, Inflammation, Ulcer, Neoplasm, Stenosis, Injuries, Foreign bodies, Diverticuli, Faecal fistula, Amoebiasis and Familial polyposis coli.
- ix. Caecum and Vermiform appendix- Appendicitis, Appendicular abscess, Appendicular mass, Perforation, Carcinoid Tumor and other Neoplasm.
- x. Gastrointestinal bleeding – Haemetemesis, Malaena, Haemobilia, Bleeding per anum - Causes, Diagnosis and Management.
- xi. Rectum and anal canal - Diagnosis and Surgical management of Congenital Anomalies, Inflammation, Ulcer, Neoplasm, Stenosis, Prolapse, Haemorrhoids, Fistula-in-ano, Fissure-in-ano, Anorectal Abscess, Incontinence, Injuries, Foreign bodies and Pilonidal sinus.
7. Umbilicus and abdominal wall – Congenital anomalies, Umbilical infections, Sinus, Neoplasm and Desmoid tumor.
8. Diagnosis and surgical measures of diseases of Hepatobiliary system -
- Liver – Abscess, Cyst - Hydatid cyst, Primary and Secondary malignant tumours, Portal Hypertension and Budd-Chiari Syndrome.
  - Gall bladder and Bile duct - Congenital anomalies, Acute and Chronic Cholecystitis, Cholelithiasis, Neoplasm, Cholangitis, Stenosis, Choledocholithiasis, Choledochal cyst and Cholangiocarcinoma.
  - Spleen – Splenomegaly and Splenic Injury.
9. Diagnosis and surgical management of Hernias – Inguinal, Femoral, Umbilical, Incisional, Abdominal wall and other hernias.
10. Endoscopic procedures - Oesophagogastroduodenoscopy, Sigmoidoscopy and Colonoscopy.
11. Principles of laproscopic surgery - Diagnostic and therapeutic laparoscopy.

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#### **PAPER – IV**

#### **Vishishta Shalya Vigyan – Speciality**

The Scholar has to choose the any one of the Specialities amongst the following based on research area

#### **PAPER – IV      Speciality No - 01 Anushastra Vigyan – Parasurgical Therapeutics 100 Marks**

##### **1. Kshara Karma and Prayoga – Caustic therapy**

- Introduction of different types of Kshara, Method of preparation, Standardization, pH value, Application, Complications and its management.
- Surgical Anatomy and Physiology of Anus and Rectum.
- Arshas - Nidana, Purvaroop, Roopa, Samprapti, Prakara and Chikitsa.
- Haemorrhoids - Aetio-pathogenesis, types and its surgical management. Knowledge of different methods of treating Haemorrhoids - Rubber band ligation, D.G.H.A.L, Radiofrequency, Ablation, Cryo-surgery, Cautery, Laser, Infrared coagulation and other advanced techniques.
- Bhagandara - Nidana, Purvaroop, Roopa, Samprapti, Prakara, Chikitsa and application of Kshara Sutra.

- vi. Fistula-in-ano - Definition, Aetio-Pathogenesis, Types, Diagnostic methods and its Surgical and parasurgical management including knowledge of Fibrin Glue, Advanced Flap Therapies and other recent techniques.
- vii. Parikartika - Nidana, Samprapti and its Chikitsa.
- viii. Fissure-in-ano - Aetio-pathogenesis, types and its management.
- ix. Sannirudhaguda and its Chikitsa.
- x. Anal Stenosis - Aetio-pathogenesis and its management.
- xi. Gudavidradhi - Nidana, Purvaroop, Roopa, Samprapti, Prakara and its Chikitsa.
- xii. Anorectal abscesses – Aetio- pathogenesis, types, complications and its management.
- xiii. Foreign body in rectum and anal canal - Method of diagnosis and its management.
- xiv. Congenital Anorectal disorders and its management.
- xv. Anorectal tumour - Types and its management.

## **2. Agnikarma – Thermo therapy**

- i. Introduction, definition and importance of Agnikarma.
- ii. Agnikarma - Poorva, Pradhana and Paschat karma, various substances and Shalakas used for Agnikarma and their indications, contra-indications and complications.
- iii. Knowledge of modern thermal equipment - Diathermy, Laser therapy, Microwave, Ultracission technique, Cryo Technique and its uses.
- iv. Effect of Agnikarma on skin, muscle tissue, nerves, metabolism, blood circulation and infective lesions.

## **3. Raktamokshana – Bloodletting Procedures**

- i. Indications, contraindications and importance of Raktamokshana.
- ii. Justification of usage of different types of Raktamokshana in various therapeutic applications.
- iii. Different types of Raktamokshana – Sastrakritha - Siravyadhana, Prachana and Asastrakritha - Shringa, Jaluka, Alabu and Ghati.
- iv. Jalauka - Nirukti, Paryaya, Bhedha, Sangrahana, Samrakshana, Jalaukavacharana Vidhi - Poorva, Pradhana and Paschat karma.
- v. Knowledge of Leeches - Morphology, Anatomy, Physiology, Bio-chemical effects of its various constituents present in its saliva.

## **PAPER – IV Speciality No–02 Asthi Sandhi evam Marma Vigyan – Orthopaedics 100 Marks**

- 1. Asthi Sharira - Etymology, Embryology, Applied Anatomy and Physiology of Asthi. Its Panchbhautik constitution, Poshan (Nutrition), Asthivaha Srotas, Upadhatu and Mala. Total Number and classification of Asthi. Concept of Dhatwagni in Ayurveda. Asthi Dhatu Kshaya and Vriddhi lakshana. Knowledge about Tarunasthi. Embryology, Ossification, Histology, Metabolism, Blood Supply, Types and Biomechanics of Bone and cartilage.
- 2. Healing mechanism of bone and factors influencing the bone healing according to Ayurvedic and Modern concept. Biological and Biophysical technologies for the Enhancement of Fracture Repair. Knowledge of Sandhaniya and Ropaniya drugs.
- 3. Sandhi Sharira – Classification, Applied Anatomy and Physiology of Asthi Sandhi. Classification, Applied Anatomy and Physiology of Joints and Healing Mechanism of a joint.
- 4. Knowledge of Splints, Orthotics & Prosthetics.

5. Knowledge of Orthopedic implants (*e.g. wires, screws, plates, nails*) and Instruments. Knowledge of equipments (*e.g. C-arm image intensifier and drill machines etc*).
6. Concept of Pain according to Ayurved and Modern Medical science.
7. Principles of Reconstruction, Transplantation, Bone grafting, Bone Banking, Bone transportation and Amputation.
8. Vata Vikara – Asthi, Sandhi and Marma related Vata Vikara like Gridhrasi, Bisvachi, Avabahuka, Manyastambha, Khalvi, Dhatugata vata, Snayugata vata, Katishoola, Katigraha.
9. Diseases pertaining to Muscles, Tendons, Ligaments, Fascia and Bursae.
10. Diseases and Congenital anomalies of Spine *e.g.* Ankylosing spondylitis, Infective conditions, Tuberculosis, Spondylolisthesis, Inter-vertebral Disc Prolapse, Spondylosis, Scoliosis, Kyphosis, spina bifida, Hemivertebra, Block vertebra, Sacralisation and Lumbrisation.
11. Diseases and Congenital anomalies of Cervical Spine
12. Diseases and Congenital anomalies Sacroiliac Joint and Bony Pelvis.
13. Diseases and Congenital anomalies of Hand.
14. Diseases and Congenital anomalies of Foot.
15. Diseases and Congenital anomalies of Limbs.
16. Orthopedic Neurological Disorders. Post Polio Paralysis & Cerebral Palsy.
17. Snehana, Swedana and Panchakarma in Marma, Asthi and Sandhi Vyadhi.
18. Yogic Practices in Orthopedics.
19. Principles of Arthroplasty- Joint Replacement.
20. Introduction of Peripheral Vascular Diseases.
21. Bhagna - Etiology, classification and General Management principles and Prognosis.
22. Modern concept of Bone and Joint injuries - Etiology, Epidemiology, Classification and General management principles.
23. Individual Bone and Joint injuries - Etiology, Epidemiology, Classification and management principles.
24. External immobilization techniques - Classical and traditional Kusha -splints, Plaster of Paris Technique, Knowledge of different splints and Plasters.
25. Pathological Fractures including Fragility fractures, Stress Fractures and Peri-prosthetic Fractures.
26. Fractures in Children – Etiology, Epidemiology, Diagnosis, management and complications.
27. Prognosis of skeletal injuries, Complications of Fractures and Joint Injuries *e.g.* Myositis ossificans, Volkman's ischemic contracture, Compartment syndrome, Crush Syndrome, DVT, Thromboembolism, Fat Embolism.
28. Rehabilitation of trauma patient and Principles of Sukhchestaprachara - Physiotherapy and its use in skeletal injuries.
29. Treatment Principles of Asahanta Bhagna - Non-unions, Vishmolvana Sahanta - Malunions and Ignored or un-reduced dislocations.
30. Diagnosis and management principles of injuries of Vessels, Nerves, Tendons and Ligaments.
31. Head, Chest and Abdominal Injuries and management principles.
32. Pelvis and Spine injuries and their management principles.
33. Sports medicine and sports injuries – Sports medicine and sports related Shoulder injuries, Elbow injuries, Knee injuries, Ankle Injuries, Recurrent Dislocations and other sports related injuries.

34. Knowledge of Conventional and advanced procedures being done for Different Bone and Joint Injuries e.g. Open Reduction and Internal Fixation, Closed Reduction and Internal Fixation, External fixators and other operative techniques.
35. Knowledge of Plastic Surgery in orthopedics and Bone grafting techniques.
36. Knowledge of various surgical procedures being done for Different Bone and Joint Diseases.
37. Hand Surgery for Diseases, Deformities and Injuries.
38. Foot Surgery for Diseases, Deformities and Injuries.
39. Amputations and Arthrodesis – General Principles of Amputations /Arthrodesis and regional Amputations.
40. Knowledge of Diagnostic and Therapeutic Arthroscopy.

**PAPER – IV      Speciality No–03 Sangyahan Vigyan – Anaesthesiology      100 Marks**

1. Knowledge of disorders like Unmada, Apasmara, Mada, Murrcha, Sanyasa and Stabdghata etc.
2. Madataya, Stages of Madataya and its management.
3. Pharmacology of Medhya, Vednasthapak, Madkari, Sangyasthapak, Nidrajanan, Akshepjanan and shamana , Svedjanan, Hridyae, Hridyotejak, Raktbharshamak, Shoolprashaman, Vaman and hrillashar (Antiemetic) dravya as mentioned in Ayurvedic samhita and their application in Sangyahan.
4. Aroma therapy as complementary and alternative therapy in pain management and Palliative care.

**5. Sangyahan Bhesaja Vigyan (Pharmacology related to Anesthesia)**

Pharmacology of:

- ☐ Drugs acting on Autonomic nervous system:
  - a .Cholinergic system and drugs- Agonist and antagonist
  - b .Adrenergic system and drugs- Agonist and antagonist
- ☐ Autocoids and related drugs:
  - a. Histamine and Antihistaminic
  - b. 5HT and antagonist
  - c. NSAID'S
  - d. Prostaglandins and leukotrienes
- ☐ Drugs acting on Respiratory system
- ☐ Drugs acting on Somatic nervous system
  - a. Skeletal muscle relaxants – Depolarizer and Non-Depolarizer.
  - b. Local anesthetics
- ☐ Drugs acting on central nervous system
  - a. General Anesthetics- Fixed and Volatile anesthetic agents.
  - b. Sedative and hypnotics
  - c. Anti epileptics
  - d. Anti psychotic and anti-maniacs
  - e. Opioids Analgesics and antagonists
- ☐ Drugs acting on cardiovascular system
  - a. Cardiac glycosides
  - b. Anti arrhythmic drugs
  - c. Anti anginal and other anti ischemic drugs
  - d. Anti hypertensive drugs

- ☐ Drugs acting on Kidneys
  - a. Diuretics
  - b. Anti diuretics
- ☐ Coagulants and anti coagulants
- 6. Airway management- Intubation, failed intubation drill, LMA, Bag and mask ventilation.
- 7. Anesthesia For: General surgery, Obstetric and Gynecology, E.N.T. and Ophthalmic, Orthopedic, Dental, Pediatric, Urology, Plastic and Outpatient / Day care surgery.
- 8. Anesthesia for patients with: Diabetes mellitus, Thyroid diseases, inherited metabolic diseases, Obesity, Respiratory diseases, Cardiac diseases, Renal diseases, Geriatric problems and neuromuscular diseases.
- 9. Regional anesthesia:
  - ☐ Subarachnoid and epidural anesthesia, analgesia
  - ☐ Plexus and nerve blocks for upper and lower limb
  - ☐ Regional anesthesia for thorax and abdomen
  - ☐ Surface anesthesia, infiltration and field blocks
- 10. Complications of Regional and general anesthesia, morbidity, mortality and medico-legal aspects.
- 11. Anesthesia for Endoscopic, laparoscopic Surgery and Laser Surgery
- 12.
  - a. Monitoring in anesthesia:
    - ☐ Cardiovascular, Respiratory, Renal function, Neurologic and neuromuscular monitoring.
    - ☐ Perioperative Thermo- regulation and monitoring
    - ☐ Perioperative awareness and monitoring depth of anesthesia with BIS.
    - ☐ Perioperative acid-base balance
    - ☐ Pt's positioning in anesthesia, its hazards and management
    - ☐ Perioperative Fluid management and Blood transfusion.
    - ☐ Risks and hazards of anesthesia
  - b. Anesthesia equipments –
    - ☐ Medical gas systems
    - ☐ Breathing systems
    - ☐ Ventilators
    - ☐ Anesthesiamachine
  - c. Post operative management-
    - ☐ Post anesthesia care
    - ☐ Post operative nausea and vomiting
    - ☐ Post operative IntraVenous fluid therapy
    - ☐ Acute post operative pain
  - d. Miscellaneous-
    - ☐ HDU, ICU, CCPRBLS & ACLS.
    - ☐ Parenteral nutrition.
    - ☐ Environmental factor and electrical safety
  - e. Management of Acute / Chronic Pain-
    - ☐ Assessment of pain
    - ☐ Perioperative pain
    - ☐ Chronic pain syndromedetection and prevention
    - ☐ WHO regime for Cancer pain

- ☐ TENS, Behavioral therapy
- f. Anesthesia in remote locations
- g. Clinical care in extreme environments (At high and low pressure and space).
- h. Relevance of Sammohana (Hypnosis), Acupressure and Acupuncture in Sangyahan.
- i. Recent advances in research in Sangyahrana, Pain Management and Palliative Care. Scope and Application of principles of Ayurveda in Sangyahrana Research.

**PAPER – IV**

**Speciality No – 04 Mutra Roga – Urology**

**100 Marks**

1. Anatomical and physiological knowledge of kidney, ureter, urinary bladder, prostate, seminal vesicles, urethra and penis.
2. Investigations of Mutravaha Srotas – Urinary tract.
3. Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and management of Ashmari – Urinary stone diseases.
4. Kidney and ureter – Clinical presentation, Investigations and Management of Congenital anomalies, Trauma, Infection, Neoplasm, Hydronephrosis, Hydroureter and Haematuria.
5. Urinary bladder - Clinical presentation, Investigations and Management of Congenital anomalies, Trauma, Infection, Neoplasm, Diverticulum, Vesico-vaginal fistula, Atony, Schistosomiasis, Urinary diversions, Retention of urine – Mutraghata and Mutrakruccha.
6. Urethra - Clinical presentation, Investigations and Management of Congenital anomalies – Hypospadias, Epispadias, Posterior urethral valve, Trauma, Infection, and Neoplasm.
7. Prostate and seminal vesicles – Benign and malignant enlargement of prostate, Prostatitis, Prostatic abscess and Calculi.
8. Penis – Clinical presentation, Investigations and Management of Congenital anomalies, Trauma, Infection, Phimosis, Paraphimosis, Peyronie's disease and Neoplasm.
9. Testis and scrotum-Clinical presentation, Investigations and Management of Congenital anomalies, Ectopic testis, Trauma, Infection, Neoplasm, Testicular torsion, Hydrocele, Varicocele, Spermatocele, Chylocele, Pyocele, Haematocele, Epididymal cyst and Fournier's gangrene.
10. Renal failure – Causes, Diagnosis, Investigations and Management.

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**Content:**

1. Identification, uses, demonstration of surgical instruments and methods of sterilization.
2. Training of case taking, bed side clinicals and case presentation.
3. Training of Surgery related Diagnostic imaging techniques.
4. Training of Surgery related Pre-operative, Operative and Post-operative procedures.
5. Demonstration and Practical training in Anaesthesia.
6. P.G. Scholars shall develop the skills by observing, assisting and performing independently all surgical and parasurgical procedures.
7. P.G. Scholars shall develop the skills by observing, assisting and performing independently concerned specialities like Anushastra Vigyan - Parasurgical therapeutics, Asthi Sandhi Evam Marma Vigyan – Orthopaedics, Sangyahan Vigyan – Anaesthesiology, Mutra Roga – Urology etc.
8. Training of Surgical Emergencies and Trauma Management.

## METHODS OF TRAINING AND TEACHING FOR M.S. (AYU) SHALYA TANTRA

Case Presentation	Once a Week
Seminar	Once a Week
Classroom Lectures	Thrice a Week
Morbidity / Mortality	Once a Week
Surgical Audit	Once a month
Journal Club	Once a month
Emergency Drills / Protocols	Once a Week
Interesting Cases	Once a Month
Assessment of Scholar	Once a Month

## Minimum Academic Requirements For PG Scholars

Case Presentation	Ten per year
Seminar	Five per year
Journal club	One per year

## Distribution of marks (practical):

1. Dissertation Presentation and Teaching demonstration	- 20 marks
2. Bedside clinical case taking-	
Long case	- 20 marks
Short case	- 10 marks
3. Identification of instruments, images etc	- 10 marks
4. Demonstration of Surgical and Parasurgical Procedures	- 10 marks
5. Viva voce	- 30 marks
<b>Total</b>	<b>- 100 marks</b>

## REFERENCE BOOKS:

1. Sushruta Samhita
2. Ashtanga Sangraha
3. Ashtanga Hridaya
4. Charaka Samhita
5. The Surgical instruments of the Hindus - Girindranath Mukhopadhyaya
6. Shalya Tantra Samuchchaya - Pandit Ramadesh Sharma
7. Shalya Vigyan (Part 1-2) - Dr. Surendra Kumar Sharma
8. Shalya Samanvaya (Part 1-2) - Vd. Anantaram Sharma
9. Shalya Pradeepika - Dr. Mukund Swaroop Verma
10. Sushruti - Dr. Ram Nath Dwivedi
11. Clinical Shalya Vigyan - Dr. Akhilanand Sharma
12. Bhagha Chikitsa - Dr. Prabhakar Janardhan Deshpande
13. Kshara sutra management in anorectal ailments - Dr. S.K. Sharma, Dr. K.R. Sharma and Dr. Kulwant Singh.
14. A manual on Fistula-in-ano and Ksharasutra Therapy – Dr. Manoranjan Sahu
15. Recent trends in the management of Arshas / Haemorrhoids - Dr. P. Hemantha Kumar
16. Anorectal diseases in Ayurveda - Dr. Sizoria and Dr. Praveen Kumar Chowdary.
17. Adhunik Shalya Chikitsa Siddhanta - Dr. Katil Narshingham Udupa

18. Agnikarma Technology Innovation - Dr. P.D. Gupta
19. Shalya Tantra Ke Siddhant - Dr. K.K.Takral
20. Arsha Evum Bhagander Mein sutra Avacharan - Vd. Kanak Prasad Vyas
21. Recent advances in Kshara Sutra - Dr. M. Bhaskar Rao
22. Leech application in Ayurveda - Dr. M. Bhaskar Rao
23. Kshara Sutra - Dr. S.N.Pathak
24. Text book of Shalya Tantra (Ayurvedic Surgery) - Dr. P. Hemantha Kumar
25. Shalya Shalakyta Tantra - Vd. S.G. Joshi
26. Surgical ethics of Ayurveda - Dr. D.N. Pande
27. Anushastra Karma - Dr. D.N. Pande
28. Concept of Vrana is Ayurveda - Dr. Lakshman Singh
29. Significance for Poorva Karma in Surgical Patient - Dr. Lakshman Singh
30. Sangyahan Prakash - Dr. D.N. Pande
31. Marma Science and Principles of Marma Therapy – Dr. Sunil Kumar Joshi
32. Recent trends in the management of Bhagandara / Fistula-in-ano - Dr. P. Hemantha Kumar
33. Principles and Practice of Agnikarma - Dr. Anand Kumar and
34. Shalya Vigyan (Sachitra) - Anantram Sharma
35. Text book of Surgery - Sabistan
36. Operative Surgery – Rob and smith
37. Bailey and Love's Short Practice of Surgery - Norman.S. Williams, Charles.V. Mann and R.C.G. Russell
38. Text books of Operative Surgery - Farquharson's
39. Principles of Surgery - Schwartz
40. Emergency Surgery - Hamilton Bailey's
41. Manipal Manual of Surgery - Dr. Rajgopal Shenoy
42. SRB's Manual of Surgery - Sriram Bhat M
43. Surgery of the Anus, Rectum and Colon - John Goligher
44. Surgical pathology - Willing Worth
45. Clinical methods in surgery - S. Das
46. Textbook of Operative Surgery - S. Das
47. A concise Text Book of Surgery - S. Das
48. A manual on Clinical Surgery - S. Das
49. A System of Surgical Diagnosis - T.N. Patel
50. Clinical Anatomy/ Surgical Anatomy - John E.Skandalakis
51. A Practical Guide to Operative Surgery - S. Das
52. Manual of Surgical Instruments - M.M. Kapur
53. Ward Procedures - Patel Mansukh. B
54. Drugs and Equipment for Anaesthesia - Arun kumar
55. Primary Anaesthesia - Maurice King
56. Synopsis of Anaesthesia - Lee
57. Miller's Anesthesia - Ronald D Miller
58. Synopsis of Anesthesia - Alfred Lee
59. Practice of Anesthesia and Resuscitation - Dr.P.K. Gupta et al.
60. Essentials of Anesthesiology - Prof. A.K. Paul
61. Clinical Anesthesia - Prof. A.K. Paul
62. Textbook of Anesthesia - Aitkenhead

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|--|--|
| 63. Practice of Anesthesia   | - Churchill Davidson                       |
| 64. Anesthesia and co-existing disease   | - Stoelting's                              |
| 65. Outline of Orthopedics   | - John Crawford Adams and David Hamblen. L |
| 66. Fractures and Joint Injuries   | - Watson-Jones                             |
| 67. Outline of Fracture  | - John Crawford Adams                      |
| 68. Practical Fracture Treatment   | - R.McRae                                  |
| 69. Clinical Orthopedic Examination  | - R.McRae                                  |
| 70. Apleys System of Orthopedics   | - Apley Louis Solomon                      |
| 71. Orthopedics – Principles & their Application – Vol. I-II – Samuel L. Turek |  |
| 72. Text book of Orthopedics and Trauma Vol. I-IV – G.S. Kulkarni              |  |
| 73. Campbell's Operative Orthopedics   | – Vol. I-IV                                |
| 74. Urology  | - Campbell-Walsh                           |
| 75. Urology Instrumentation:A comprehensive guide – Sabnis Ravindra B          |  |
| 76. Text book of Operative Urology   | - F.F.Marshall, J.W.McAninch               |
| 77. Oxford Hand book of Urology  | - John Reynard, Simon Brewster             |
| 78. Smith and Tanagho's General Urology  | - Jack W. McAninch, Tom F.Lue              |
| 79. Urological Emergencies in Clinical Practice                                | - Hashim, John Reynard                     |

#### **Additional Books for Reference**

1. Anorectal Disorders Ayurvedic Approach - Dr. Rajasree
2. Ayurveda for Low Backache - Dr. Rajasree

#### **2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)**

Given under Clause No. 2.10

#### **2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**

Given under Clause No. 2.10

#### **2.13 Records**

Relevant records are to be maintained

#### **2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.
3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.
4. For approving the title a scrutiny Committee shall be constituted by the University.

5. The University should display the approved synopsis of dissertation on their website.
6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.
7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.
9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.
10. The dissertation shall consists critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.
11. The dissertation shall consist of not less than forty thousand words.
12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.
13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.
14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.
15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.
16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.
17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.
18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

**2.20 Journals**

**Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504
15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyan, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906

34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamy@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in/Open Access Peer Reviewed E-Journal*. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

## **3. EXAMINATIONS**

### **3.1 Eligibility to appear for examinations [including Supplementary]**

#### **A. Preliminary examination:**

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

#### **B. Final examination:**

For appearing final year examination 80 % attendance in each theory and practical subjects in 2 nd & 3 rd years separately is required

### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

**Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

**Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

**SCHEDULE OF EXAMINATIONS**

- a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.
- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

**CONDUCT OF EXAMINATION**

1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.

3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

#### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.

The pattern is long essay for 20 marks -one question

Short essay 10 marks - Eight questions

Total 9 questions for 100 marks

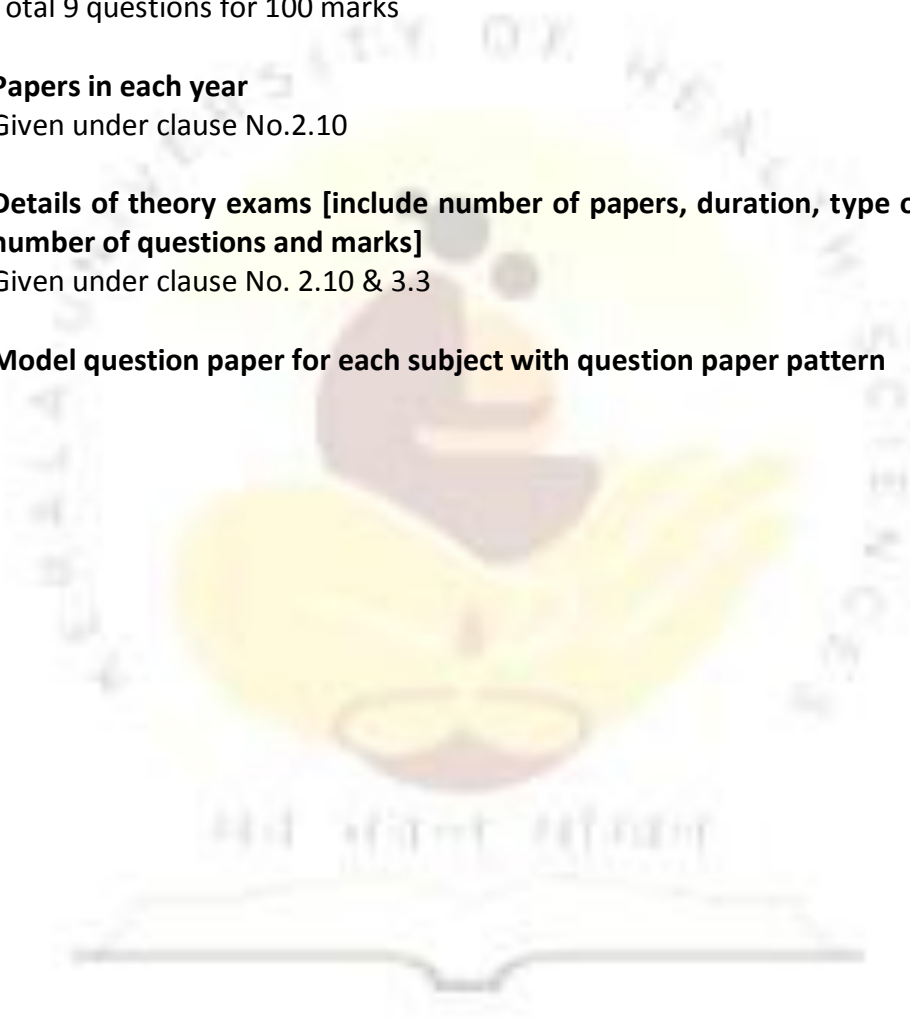
#### **3.4 Papers in each year**

Given under clause No.2.10

#### **3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

#### **3.6 Model question paper for each subject with question paper pattern**



QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Shalya)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe the importance of Trividha karma in Salyatantra. Compare it with modern principles of peri-operative care

**Short Essays**

**(8x10=80)**

2. Explain '*agnikarma vidhi*' in detail.
3. Describe stages of anaesthesia. Explain spinal anaesthesia .
4. Explain '*hypovolumic shock*' with its pathogenesis and management.
5. Describe the importance of '*shadkriya-kala*' in salyatantra practice
6. Differentiate between hyponatremia & hypokalemia
7. Briefly describe appendicitis with its aetipathogenesis, clinical features and treatment
8. Describe the types and application of different varieties of '*rakta-moksha*'
9. Write the merits and demerits of MRI scan and CT scan .

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Shalya)  
(..... scheme)**

**Paper I – Shalya Tantra Vangmaya – Literature, Research and Development**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe 'yogya vidhi' in detail. Explain the importance of 'yogya-vidhi' in present day surgical practice

**Short Essays**

**(8x10 = 80)**

2. Common medico legal issues in surgical practice.
3. Write a note on surgical ethics .
4. Differentiate MRI & CT scan, with its merits and demerits
5. Describe 'nasa-sandhana vidhi'
6. Need of knowledge and importance of surgical audit and research in surgical practice.
7. Explain recent development of susrutas surgical principle, with a suitable example
8. Various techniques of grafts, in plastic and reconstructive surgeries.
9. Describe endoscopy.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Shalya)  
(..... scheme)**

**Paper II – Shalya Tantra Vigyan**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe the nidana samprapthi, bheda, lakshana and chikitsa of Asmari.

**Short Essays**

**(8x10 = 80)**

2. Aetiopathogenesis and treatment of Fissure-in-ano
3. Explain the diagnosis and treatment of rectal prolapse.
4. Describe the complications of fracture
5. Differentiate between amasopha and pakwa sophia
6. Explain anterior shoulder dislocation with its relevant anatomy, features and management.
7. Write a note on amputation.
8. Describe '*vaivrutapaha chikitsas*' among sasti-upakramas.
9. Explain anthravridhi (inguinal hernia) in detail

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Shalya)  
(..... scheme)**

**Paper III – Adhunik Shalya Karma - Modern Surgery**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain aetiopathogenesis, types, features and surgical management of inguinal hernia

**Short Essays**

**(8x10 = 80)**

2. Describe the principles of laproscopic surgery. Explain diagnostic laproscopy.
3. Explain the diagnosis and surgical management of rectal prolapse.
4. Write the aetiopathogenesis, types, features and surgical management of cholecystitis
5. Explain the causes, differential diagnosis, and management of bleeding per anus.
6. Explain diagnosis and surgical management of breast carcinoma.
7. Describe aetiopathogenesis, features and surgical management of appendicitis
8. Indications & merits of – (a) Sigmoidoscopy and (b) colonoscopy.
9. Explain types, diagnosis and surgical management of head injury.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Shalya)  
(..... scheme)**

**Paper IV – Speciality No - 01 Anushastra Vigyan – Parasurgical Therapeutics**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain 'siravyadha vidhi' in detail

**Short Essays**

**(8x10 = 80)**

2. Explain methods of diagnosis and management of 'foreign body in rectum & anal canal'
3. Write the pathogenesis of bhagandara. Explain ksharasutra application in bhagandara
4. Explain the indications and benefits of infra red coagulation therapy and rubber band ligation in the management of haemorrhoids
5. Explain method of preparation of kshara
6. Justification and usage of different types of raktamoksha in various therapeutic applications
7. Describe various dahana upakarnas used for agnikarma
8. Sannirudha guda and its chikitsa
9. Biochemical effects of various constituents present in leech saliva

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Shalya)  
(..... scheme)**

**Paper IV – Speciality No–02 Asthi Sandhi evam Marma Vigyan – Orthopaedics**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain shoulder dislocation with its relevant anatomy, types, features and management

**Short Essays**

**(8x10 = 80)**

2. Write a note on splints and prosthesis
3. Stages of fracture healing & factors influencing fracture healing
4. Explain ankylosing spondylitis.
5. Write a note on sports related injuries of (a) shoulder joint and (b) knee joint
6. Explain the principles of arthroplasty-joint replacement
7. Write the general management principles of bhagna as per susruta
8. Yogic practices in orthopaedics
9. Write a note on rehabilitation of trauma patient and the role of physiotherapy in skeletal injuries.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Shalya)  
(..... scheme)**

**Paper IV – Speciality No–03 Sangyahan Vigyan – Anaesthesiology**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. What is regional anaesthesia? Explain surface anesthesia, infiltration and field blocks

**Short Essays**

**(8x10 = 80)**

2. Explain the role of aroma therapy as an alternative therapy in pain management
3. Various anaesthetic drugs acting on cardiovascular system & its pharmacology
4. Points to be noted while giving anaesthesia to patients with  
(a) diabetes mellitus & (b) respiratory diseases
5. Explain various anaesthesia equipments
6. WHO regime for cancer pain
7. Complications of regional and general anaesthesia
8. Anaesthesia for laproscopic surgery
9. Describe various stages of madatyaya and its management

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Shalya)  
(..... scheme)**

**Paper IV – Speciality No – 04 Mutra Roga – Urology**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain renal failure with its causes, diagnosis investigations and management.

**Short Essays**

**(8x10 = 80)**

2. Describe BPH
3. Differentiate between phymosis and para-phymosis
4. Investigations on urinary tract
5. Causes, differential diagnosis investigations and management of hematuria.
6. Write nidana-sampraptjhi, lakshana and chikitsa of Asmari
7. Differentiate between pyocele, haematocele and chylocele
8. Investigations and management of congenital anomalies of urethra.
9. Describe clinical features, investigations and management of Hydrocele.

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

**3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4 examiners out of which one should be external from out of the state. The examiners should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

### **4. INTERNSHIP**

Not applicable

### **5. ANNEXURES**

#### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended for six months or more in accordance with the time of submission of the synopsis to the University.

- (4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.
- (5) A Board of Research Studies shall be constituted by the University for approving the title.
- (6) The University shall display the approved synopsis of dissertation on their website.
- (7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.
- (8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
- (9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.
- (10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.
- (11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.
- (12) The dissertation shall consist of not less than forty thousand words.
- (13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.
- (14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.
- (15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.
- (16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.
- (17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.
- (18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.
- (19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.
- (20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.
- (21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study
7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman
8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.

12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

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## **SYLLABUS**

**for Courses affiliated to the  
Kerala University of Health Sciences  
Thrissur 680596**



**Ayurveda Dhanvantari – Shalakya  
(M.S. (Ayurveda) - Diseases of Eye, Ear, Nose,  
Throat, Head, Neck, Oral and Dentistry)**

**Course Code:**

**(2019-20 Academic year onwards)**

**2019**

## 2. COURSE CONTENT

### 2.1 Title of course and description:

Ayurveda Dhanvantari – Shalakya (M.S. (Ayurveda) – Diseases of Eye, Ear, Nose, Throat, Head, Neck, Oral and Dentistry)

### 2.2 Objectives:

The aims of the post -graduate degree course shall be to provide orientation of specialities and super-specialities of Ayurveda and to produce experts and specialists who can be competent and efficient teachers, physicians, pharmaceutical experts, researchers and profound scholars in various fields of specialization of Ayurveda.

### 2.3 Medium of instruction:

The medium of instruction of the course is English

### 2.4 Course outline

a. The student shall have to undergo a study for a period of three years after the admission

b. The student shall have to attend at least 80% of total lectures, practical and clinical tutorials or classes to become eligible for appearing for the examination.

c. The students shall have to attend the hospital and other duties as may be assigned to them during the course of study

d. The students of clinical subject shall have to do Resident duties in their respective departments and student of non clinical subject shall have duties in their respective departments like pharmacy, herbal garden, and laboratory during entire period.

e. The students shall have to attend special Lectures, demonstrations, seminars, study tours and such other activities as may be arranged by the teaching departments.

### 2.5 Duration

3 years.

### 2.6 Subjects

Given under curriculum clause no.2.10

The concept of health care counseling shall be incorporated in all relevant areas.

### 2.7 Total number of hours

Given under curriculum Clause No 2.10

### 2.8 Branches if any with definition

Not applicable

## 2.9 Teaching learning methods

Lecture classes, completion works, seminars, paper presentations, group discussions, assignments, clinical / lab training etc.

## 2.10 Content of each subject in each year

*(The changes proposed by the Apex Council of Ayurveda shall be incorporated in this syllabus as and when the same is notified by the Apex Council)*

### **MD/MS - AYURVEDA PRELIMINARY**

#### **PAPER – I**

#### **RESEARCH METHODOLOGY & MEDICAL STATISTICS**

**Theory – 100 Marks**

**Teaching hours - 200**

#### **PART A**

**60 Marks**

#### **RESEARCH METHODOLOGY**

**Teaching hours - 120**

### **1. Introduction to Research**

- a. Definition of the term research
- b. Definition of the term anusandhan
- c. Need of research in the field of Ayurveda

### **2. General guidelines and steps in the research process**

- a. Selection of the research problem
- b. Literature review: different methods (including computer database) with their advantages and limitations
- c. Defining research problem and formulation of hypothesis
- d. Defining general and specific objectives
- e. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
- f. Sample design
- g. Collection of the data
- h. Analysis of data.
- i. Generalization and interpretation, evaluation and assessment of hypothesis.
- j. Ethical aspects related to human and animal experimentation.
- k. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics

### **3. Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
  - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
  - b. Different types of referencing and bibliography.
  - c. Thesis/Dissertation: contents and structure
  - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)
- 5. Classical Methods of Research.**

Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.  
Dravya-, Guna-, Karma-Parikshana Paddhati  
Aushadhi-yog Parikshana Paddhati  
Swastha, Atura Pariksha Paddhati  
Dashvidha Parikshya Bhava  
Tadvidya sambhasha, vadmarga and tantrayukti
- 6. Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.**
- 7. Different fields of Research in Ayurveda**

Fundamental research on concepts of Ayurveda

  - a. Panchamahabhuta and tridosha.
  - b. Concepts of rasa, guna, virya, vipak, prabhav and karma
  - c. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.
- 8. Literary Research-**

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.  
Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.
- 9. Drug Research (Laboratory-based)- Basic knowledge of the following:**

Drug sources: plant, animal and mineral. Methods of drug identification.  
Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters as set by Ayurvedic Pharmacopoeia of India.  
Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).
- 10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.**
- 11. Introduction to latest Trends in Drug Discovery and Drug Development**
  - Brief information on the traditional drug discovery process
  - Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and networkphysiology
  - Brief introduction to the process of Drug development.
- 12. Clinical research:**

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies Longitudinal & Cross sectional studies Prospective & Retrospectives studies Cohort studies

Randomized Controlled Trials (RCT) & their types

Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies –

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in- depth interview and Focus Group Discussion.

- 13.** Pharmacovigilance for ASU drugs. Need, scope and aims & objectives.  
National Pharmacovigilance Programme for ASU drugs.
- 14.** Introduction to bioinformatics, scope of bioinformatics, role of computers in biology.  
Introduction to Data base- Pub med, Medlar and Scopus. Accession of databases.
- 15.** Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

## **PART B**

**40 Marks**

### **MEDICAL STATISTICS**

**Teaching hours - 80**

- 1.** Definition of Statistics: Concepts, relevance and general applications of Biostatistics in Ayurveda
- 2.** Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
- 3.** Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete
- 4.** Measures of Central tendency – Mean, Median and Mode.
- 5.** Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation
- 6.** Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda
- 7.** Collection, classification, presentation, analysis and interpretation of data (Definition, utility and methods)
- 8.** Scales of Measurements- nominal, ordinal, interval and ratio scales.  
Types of variables – Continuous, discrete, dependent and independent variables.  
Type of series – Simple, Continuous and Discrete

**9. Measures of Central tendency – Mean, Median and Mode.**

**10. Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation**

**11. Non parametric methods: Chi-square test, Fisher's exact test, McNamara's test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)**

**12. Correlation and regression analysis:**

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson's correlation co-efficient, Spearman's rank correlation.  
Regression- simple and multiple

**13. Sampling and Sample size computation for Ayurvedic research:**  
Population and sample. Advantages of sampling, Random (Probability) and non random (Non-probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

**14. Vital statistics and Demography: computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics**

**15. Familiarization with the use of Statistical software like SPSS/Graph Pad**

**PRACTICAL**

**100 Marks**

**Teaching hours – 120**

**I. RESEARCH METHODOLOGY**

	PRACTICAL NAME
<b>1</b>	Pharmaceutical Chemistry Familiarization and demonstration of common lab instruments for carrying out analysis as per API
<b>2</b>	Awareness of Chromatographic Techniques Demonstration or Video clips of following: Thin-layer chromatography (TLC). Column chromatography (CC). Flash chromatography (FC) High-performance thin-layer chromatography (HPTLC) High Performance (Pressure) Liquid Chromatography (HPLC) Gas Chromatography (GC, GLC)
<b>3</b>	Pharmacognosy Familiarization and Demonstration of different techniques related to:- Drug administration techniques- oral and parenteral. Blood collection by orbital plexuses puncturing. Techniques of anesthesia and euthanasia. Information about different types of laboratory animals used in experimental research Drug identification as per API including organoleptic evaluation
<b>4</b>	Pharmacology and toxicology Familiarization and demonstration of techniques related to pharmacology and

	toxicology
5	Biochemistry (Clinical) Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA- techniques, nephelometry. Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and micro albumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.
6	Clinical Pathology Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.
7	Imaging Sciences Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.
8	Clinical protocol development

## II. MEDICAL STATISTICS

Practical hours - 20

Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15.

Records to be prepared.

Distribution of marks (Practical):

1. Instrumental spotting test	- 20 Marks
2. Clinical protocol writing exercise on a given problem	- 20 Marks
3. Records:	
Research methodology	- 10 Marks
Medical statistics	- 10 Marks
4. Viva- Voce	- 40 Marks
<b>Total</b>	<b>- 100 Marks</b>

### REFERENCE BOOKS:-

#### Pharmacognosy:

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13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

#### **Pharmaceutical chemistry, quality control and drug standardization:**

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8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
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10. Qadry JS and Qadry S Z., Text book of Inorganic Pharmaceutical and Medicinal Chemistry, B. S. Shah Prakashan, Ahmedabad.
11. Quality Control Methods for Medicinal Plant Material. Reprint (2002). WHO Geneva.
12. Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
15. Stahl E., Thin Layer Chromatography - A Laboratory Handbook, Springer Verlag, Berlin.

16. Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo and Dev Dutt Rakesh (2008). Extraction Technologies for Medicinal and Aromatic Plants INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste

### **Biochemistry and Laboratory techniques:**

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
3. David Frifelder. W. H. Freeman. (1982). Physical Biochemistry by; 2 edition
4. David Sultan (2003). Text book of Radiology and Imaging, Vol-1, 7th Edition.
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7. Kanai L.Mukherjee. Clinical Pathology:, Medical Laboratory Technology Vol. I.Tata McGrawHill 1996, New Delhi.
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10. Satyanarayanan,U. Essentials of Biochemistry, Books and allied(P) Ltd.2002
12. Zubay, G.L. Biochemistry, W.M.C. Brown Publishers, New York 1998.
13. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

### **Research methodology:**

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
3. Altick and Fenstermaker. (2007). *The Art of Literary Research*. 4th ed. W. W. Norton. Castle, Gregory. *Blackwell Guide to Literary Theory*. Blackwells,
4. Bowling, A. (2002). Research Methods in Health (2nd ed). Buckingham: Open University Press.
5. Day R.A. How to write a scientific paper. Cambridge University Press.
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8. Greenhalgh, T. (2006) How to Read a Paper: The Basics of Evidence-Based Medicine. (3rd ed) Blackwell
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11. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
12. Relevant portions of Ayurvedic Samhitas and other texts

### **Drug research and development:**

1. RICK NG, (2009). DRUGS-from discovery to approval. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB 925).
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13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
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### **Biotechnology and Bio-informatics:**

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2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978- 81-8318-831-9
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11. [www.strobe-statement.org](http://www.strobe-statement.org)
12. [www.icmr.nic.in](http://www.icmr.nic.in)

### **Clinical Evaluation:**

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### **Medical Statistics:**

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- Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
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  13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
  14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
  15. Suhas Kumar Shetty- Medical statistics made easy

#### **Additional Books for Reference**

1. Notes on Qualitative Research Methodology – School of Fundamental Research in Ayurveda, KUHS
2. Guide to Synopsis – School of Fundamental Research in Ayurveda, KUHS
3. Anusandhana - A Hand Book of Research Methodology & Biostatistics - Dr. K. Pradeep

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### **M.S.-AYURVEDA PRELIMINARY**

#### **SHALAKYA**

**(Diseases of Eye, Ear, Nose, Throat, Head, Neck, Oral and Dentistry)**

**PAPER - II**

**Theory -100 Marks**

**Practical and Viva Voce– 100 Marks**

**PART A**

**50 Marks**

1. History and chronological development of Shalakya Tantra.
2. Establishment and importance of 'Shirasouttamangatwam', 'Nasa Hi shirsodwaram', and 'Sarvendriyanam Nayanam Pradhanam'.
3. Applied Anatomy and physiology of Netra, Karna, Nasa, Mukha with related marmas and disease classification as per Ayurvedic classics.
4. Knowledge of Agropaharaniya in Shalakya Tantra.
5. Fundamental knowledge of Sterilization and Anaesthesia in Shalakya Tantra.
6. Swasthivritta related to Shalakya Tantra.
7. Description of Yantra, Shastra and anushastra related to Shalakya Tantra.
8. Application of Panchakarma chikitsa in Urdhvajatrugata Vikaras.
9. Applied knowledge of various therapeutic procedures used in Netra rogas

10. Applied knowledge of various therapeutic procedures used in Karna-Nasa-Mukha-Danta and Shirorogas, like Karnaprakshalana, Karna dhoopana, Karnapichu, Karnapoorana, Nasaprakshalan, Nasapichu, Kavala, Gandusha, Pratisarana, Dhoomapana, Shiroabhyanga, Shiropichu, Shirodhara, Shirobasti etc.
11. Knowledge of Vranabandhana (bandaging of wounds) in Shalakya Tantra.
12. Common classical yogas and single drug therapy in Shalakya Tantra.
13. Pathyapathya in Shalakya Tantra.

## **PART B**

**50 Marks**

14. Critical analysis of nidana of Urdhwajatravikaras.
15. Fundamentals of optics and refraction.
16. Clinical methods of eye examination and application of various aids and techniques with their respective interpretation viz. Retinoscopy, Refraction, Tonometry, Slit lamp examination, Pachymetry, Direct and Indirect Ophthalmoscopy, Gonioscopy, Perimetry, A scan, B scan, FFA (Fundus Fluorescein Angiography), OCT (Optical Coherence Tomography) etc.
17. Clinical methods of Ear examination with special reference to hearing and balance.
18. Fundamentals of Acoustics and Audiology.
19. Clinical methods of examination of Nose and Para nasal sinuses with various aids and techniques.
20. Clinical methods of Oro-Dental examination with various instruments and techniques.
21. Basic pharmacology of common drugs required in diagnostic and therapeutic procedures in Eye, ENT and Oro-Dentistry.
22. Eye donation and Eye banking.
23. Knowledge of handling of Bio-medical waste.

## **PRACTICAL**

**100 Marks**

### **Pattern of practical/clinical training-**

1. Clinical postings in OPD, IPD, Kriyakalpa and OT.
2. Clinical bed side case presentation
3. Case record - 20 cases (Eye, ENT, Shiras and Oro-dental 5 cases each).
4. Hands on training in Ayurvedic treatment procedures in Netra, Karna-Nasa – Shira – Mukha-Danta Rogas.
5. Participation in seminars, workshops, CMEs.

### **Distribution of marks**

1. Case record	- 20 Marks
2. Bed side examination	
a. Long case	- 20 Marks
b. Short case	- 10 Marks
c. Procedure demonstration	- 15 Marks
3. Identification of specimens, radiographs	- 15 Marks
4. Viva voce	- 20 Marks
<b>Total</b>	<b>- 100 Marks</b>

### **Reference Books:-**

1. Charaka Samhita with commentaries.
2. Sushruta Samhita and Vagbhata with commentaries.
3. Astangahridaya and Astangasangraha with commentaries.
4. Madhavanidan with commentaries.
5. Bhavaprakashawith commentaries.
6. Sarangadhara Samhita with commentaries.
7. Sahstrayoga Sangraha.
8. Nimi Tantra.
9. Relevant part of Chakradhatta, Bhel Samhita, Harita Samhita.
10. Shalakya Tantra – Ramanath Dwivedi - R.C. Chaudhary.
11. The Actions and uses of Indigenous Ophthalmic Drugs - N. Srikanth.
12. Clinical Examination of Ophthalmic Cases - Agarwal and Gupta.
13. Alder's Physiology of the Eye and Clinical Applications - Cotlier, St. Louis.
14. Disease of the Lens and Vitreous, Glaucoma and Hypotony - Duke Elder, St. Louis.
15. Manual of the Diseases of the Eye – Bailliere Tindal and Castell. Ahmed E, Dhanda, Dutta, L.C Jaypee brothers, May C and Worth C.
16. Ocular Differential diagnosis.
17. Clinical Ophthalmology – Roy Fedrick Hampton, Lea and Febiger Smith, R Varghese.
18. Manual of Refraction - Duke and Elder.
19. Hand Book of ophthalmology - B.M. Chatterjee.
20. Clinical Ophthalmology - Kanski.
21. Parsons Diseases of Eye.
22. Stallard's Eye Surgery.
23. Dental Anatomy Histology.
24. Killey and Kay's Outline of Oral Surgery.
25. Diseases of Nose Throat and Ear - Bhargav Shah.
26. Diseases of Nose Throat and Ear, Head and Neck – E B Edr.
27. A Text book of Otorhinolaryngology - Scott Browns edition.
28. Text book of Ear Nose Throat diseases - Dhingra.
29. Text book on ENT - Mohd. Maqbool.
30. Logan Turner's book on ENT.
31. Ballengers text book of ENT.
32. Kumin's text book of ENT.
33. Rob Smith's book of ENT surgery.
34. Paparella's book of ENT.
35. Hazarika's text book on ENT.
36. Audiology Anirwan Biswas.

### **Additional Books for Reference**

1. Text Book of Siroroga - A Conceptual Analysis      Publication Division, Govt. Ayurveda College, Trivandrum
2. A Text Book of Ophthalmology in Ayurveda      Dr. P. K. Shantha kumari

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**M.S.- AYURVEDA FINAL YEAR**

**SHALAKYA**

**(Diseases of Eye, Ear, Nose, Throat, Head, Neck, Oral and Dentistry)**

**PAPER – I**

**Shalakya - Netra Roga**

**100 Marks**

**PART A**

**50 Marks**

1. Nidanapanchaka and samanya chikitsa of netrarogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Sandhigata, Vartmagata and Pakshmagatarogas with their comparative knowledge of modern science.
3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Shuklagata and Krishnagatarogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Drishtigata and Sarvagatarogas with their comparative knowledge of modern science.
5. Descriptive knowledge of Ashtavidhashastrakarma (eight types of surgical procedures) and Chaturvidhachikitsa (Bheshaja, Shashtra, Kshara and Agni) and post operative care of the patient with respect to Netrarogas.
6. Diseases of eyelids and lacrimal apparatus and their Modern and Ayurvedic Management.
7. Disorders of conjunctiva, cornea and sclera and their Modern and Ayurvedic Management.

**PART B**

**50 Marks**

8. Disorders of uveal tract and lens and their Modern and Ayurvedic Management.
9. Disorders of vitreous, retina, optic nerve, visual pathway and visual cortex and their Modern and Ayurvedic Management.
10. Benign and malignant tumours of the eye and their Ayurvedic Management.
11. Study of Nayanabhighata with prevention and management.
12. Concept of congenital, developmental disorders of eye and prevention and management through Ayurveda and modern science.
13. Ocular motility disorders and their management as per Ayurvedic and modern science.
14. Neurological and systemic disorders affecting Eyes and their Modern and Ayurvedic Management.

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**PAPER – II**

**Shalakya – Shiro-Nasa- Karna evum Kantha Roga**

**100 Marks**

**PART A**

**50 Marks**

1. Nidanapanchaka and samanya chikitsa of shiro-nasa-karna and kantharogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Shiro and kapalgatha rogas with their comparative knowledge of modern science.

3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Nasarogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Karna rogas with their comparative knowledge of modern science.
5. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Kantharogas with their comparative knowledge of modern science.

**PART B**

**50 Marks**

6. Descriptive knowledge of Ashtavidhashastrakarma (eight types of surgical procedures) and Chaturvidha chikitsa (Bheshaja, Shasthra, kshara and Agni) and post-operative care of the patient with respect to ENT disorders.
7. Study of various types of Headache and their Modern and Ayurvedic Management.
8. Diseases of the Nose and paranasal sinuses and their Modern and Ayurvedic Management.
9. Diseases of the Ear and their Modern and Ayurvedic Management.
10. Diseases of the Throat and Larynx and their Modern and Ayurvedic Management.

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**PAPER - III**

**Shalakyā –Mukha Danta Roga**

**100 Marks**

**PART A**

**50 Marks**

1. Nidanapanchaka and samanyachikitsa of Mukha-Dantarogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Oshthagata rogas with their comparative knowledge of modern science.
3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Dantamulagata rogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Danta rogas with their comparative knowledge of modern science.
5. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Jiwhagata rogas with their comparative knowledge of modern science.
6. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Talugata rogas with their comparative knowledge of modern science.

**PART B****50 Marks**

7. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Sarvasara mukha rogas with their comparative knowledge of modern science.
8. Jalandhar bandha and its importance and application in painless tooth extraction.
9. Diagnostic Methodology in oral and dental diseases.
10. Oro- Dental diseases with their Modern and Ayurvedic management.
11. Knowledge of essential modern drugs and anaesthetic agents for diagnosis and surgical procedures in oro-dentistry.
12. Updated knowledge of modern instruments of Oro-Dental Disorders.

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**PAPER – IV****Shalakya – Shalakya Vishishtha Chikitsa Vigyan****100 Marks****PART A****50 Marks**

1. Detailed study of Netra kriyakalpas and vishishta aushadhikalpas with their standard operative procedures and their critical analysis.
2. Critical analysis of classical treatment procedures and vishishta aushadhikalpas with their standard operative procedures and their critical analysis in the context of Anya Urdhwajatrugata vikaras.
3. Role of Panchakarma chikitsa in Urdhwajatrugata vikaras.
4. Descriptive knowledge of common ocular surgical procedures like DCT, DCR, Pterygium, Entropion, Ectropion, Chalazion surgery, Cataract surgery, Evisceration, Enucleation, surgical procedures of glaucoma etc.
5. Descriptive knowledge of common ENT surgical procedures like Tympanoplasty, Mastoidectomy, Septoplasty, Septorhinoplasty, antral puncture, Turbinectomy, Polypectomy, Tonsillectomy etc.
6. Applied aspects of Imaging in ENT and head disorders
7. Speech therapy and rehabilitation of the deaf and mute.
8. Recent advances in the medical and surgical management of Eye, ENT and Oro-Dental diseases.
9. Karna sandhana, Nasasandhana, Oshthasandhana with their recent advances.
10. Scope of researches in Shalakya Tantra in present era.

**PART B****50 Marks**

11. Ocular emergencies and their management.
12. Knowledge of preventive and community ophthalmology -WHO and National Programme for control of blindness and role of Ayurveda in these Programmes.
13. Knowledge of National Programme for deafness and tinnitus and role of Ayurveda in these Programmes.
14. Knowledge of National Programme for prevention of oral cancer and role of Ayurveda in these Programmes. .

15. Effects of environmental hazards, and life style disorders of Eye, ENT and Oro dental disorders and their Modern and Ayurvedic preventive and therapeutic measures.
16. Management of emergencies in ENT, Head and Oro-Dental disorders.
17. Effects of systemic diseases on Eye, ENT, Head and Oro-dental diseases and their Modern and Ayurvedic management.
18. Removal of foreign bodies from Eye, ENT and Oro-Dental disorders.
19. Importance of Yogic kriyas, Yogasana and pranayama in Shalakyta tantra.
20. Knowledge of rules, regulations and medico-legal aspects of Ophthalmic, ENT and Oro-dental practice.

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## METHODS OF TRAINING

- Intensive integrative training would be imparted to scholars in understanding the classical Ayurvedic aspects with an emphasis of critical comparative interpretation.
- Mandatory participation of scholars in seminars, group discussions, clinical demonstrations, journal review meetings, case study, continuing education activities and research clinical projects.
- During the first year course the emphasis would be laid to impart adequate knowledge on fundamental aspects and their applications, with afocuson latest diagnostic tools, instrumentations and laboratory procedures. Practical orientation and hospital based clinical training is an integral part of the curriculum all through and also to be involved in the dissertation work.
- In the second year, training would stress upon extending the knowledge on techniques and imparting skill for surgical performance, so that the scholar is able to perform Eye, Ear, Nose, Throat and Dental surgical procedures independently.
- In the third year the scholar should concentrate on the clinical work and research work based on the dissertation.
- The participation of the scholars in all the aspects of educational process is mandatory.
- Hospital postings- The student has to work for 6 terms (one term of 6 months each) of resident posting is compulsory you to whom first 2 postings will be as a JR 1, the next two postings will be as a JR 2 and final two postings as JR 3.
- The student should also develop in the academic work of the department.

## Pattern of Practical Examination:

1. Bed side examination	
Short case 2 of 10 marks each	- 20 Marks
Long case	- 20 Marks
2. Identification of specimen/Instrument/Radiograph	-10 Marks
3. Thesis Presentation / Viva	- 10 Marks
4. Teaching Skills	- 10 Marks
5. Viva Voce	- 30 Marks
<b>Total</b>	<b>- 100 Marks</b>

## REFERENCE BOOKS:

1. Charaka Samhita with commentaries.
2. Sushruta Samhita and Vagbhata with commentaries.
3. Astangahridaya and Astangasangraha with commentaries.
4. Madhavanidan with commentaries.
5. Bhavaprakashawith commentaries.
6. Sarangadhara Samhita with commentaries.
7. Sahstrayoga Sangraha.
8. Nimi Tantra.
9. Relevant part of Chakradhatta, Bhel Samhita, Harita Samhita.
10. Shalakra Tantra – Ramanath Dwivedi - R.C. Chaudhary.
11. The Actions and uses of Indigenous Ophthalmic Drugs - N. Srikanth.
12. Clinical Examination of Ophthalmic Cases - Agarwal and Gupta.
13. Alder's Physiology of the Eye and Clinical Applications - Cotlier, St. Louis.
14. Disease of the Lens and Vitreous, Glaucoma and Hypotony - Duke Elder, St. Louis.
15. Manual of the Diseases of the Eye – Bailliere Tindal and Castell. Ahmed E, Dhanda, Dutta, L.C Jaypee brothers, May C and Worth C.
16. Ocular Differential diagnosis.
17. Clinical Ophthalmology – Roy Fedrick Hampton, Lea and Febiger Smith, R Varghese.
18. Manual of Refraction - Duke and Elder.
19. Hand Book of ophthalmology - B.M. Chatterjee.
20. Clinical Ophthalmology - Kanski.
21. Parsons Diseases of Eye.
22. Stallard's Eye Surgery.
23. Dental Anatomy Histology.
24. Killey and Kay's Outline of Oral Surgery.
25. Diseases of Nose Throat and Ear - Bhargav Shah.
26. Diseases of Nose Throat and Ear, Head and Neck – E B Edr.
27. A Text book of Otorhinolaryngology - Scott Browns edition.
28. Text book of Ear Nose Throat diseases - Dhingra.
29. Text book on ENT - Mohd. Maqbool.
30. Logan Turner's book on ENT.
31. Ballengers text book of ENT.
32. Kumin's text book of ENT.
33. Rob Smith's book of ENT surgery.
34. Paparella's book of ENT.
35. Hazarika's text book on ENT.
36. Audiology Anirwan Biswas.

## Additional Books for Reference

1. Text Book of Siroroga - A Conceptual Analysis Publication Division, Govt. Ayurveda College, Trivandrum
2. A Text Book of Ophthalmology in Ayurveda Dr. P. K. Shantha kumari

## 2.11 No: of hours per subject (lecture-tutorial-seminar-group discussion)

Given under Clause No. 2.10

**2.12 Practical training given in labs/supervision (No: of hours for each exercise/training)**  
Given under Clause No. 2.10

**2.13 Records**

Relevant records are to be maintained

**2.14 Dissertation: Guide/Co-Guide/ Change of Guide**

1. The title of the dissertation along with the synopsis, with approval of the Ethic Committee constituted by the Institution as per Regulations of the University, shall be submitted to the University within a period of six months from the date of admission to PG course.
2. If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation(1) his terms for final PG course will be extended for six months or more in accordance with the time of submission of the synopsis to the University.
3. The synopsis of the proposed scheme of work should indicate the familiarity of the student with the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide, if any. The University should approve the synopsis not later than three months after submission of the synopsis.
4. For approving the title a scrutiny Committee shall be constituted by the University.
5. The University should display the approved synopsis of dissertation on their website.
6. The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda. The subject of the dissertation shall have relation with the subject matter of the speciality.
7. Once the title for dissertation is approved by the scrutiny committee of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.
8. No student shall be allowed to submit the dissertation before six months of final year. However, the student shall continue his or her regular study in the institution after submission of dissertation to complete three years.
9. The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the teacher approved by the University.
10. The dissertation shall consist critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study summary conclusion, and references cited in the dissertation should be suitable for publication.
11. The dissertation shall consist of not less than forty thousand words.
12. The dissertation shall contain, at the end, a summary of not more than one thousand five hundred words and the conclusion not exceeding one thousand words.
13. The guide or supervisor shall be a person of status of a Professor or Associate Professor or Assistant Professor with five years University approved teaching experience in the subject or three years as Co-Guide.

14. Five copies of the bound dissertation along with a certificate from the supervisor or guide should reach the office of the Controller of Examinations of the University four months before the final examination.

15. The dissertation shall be assessed by two external and one internal examiners appointed by the University.

16. The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third examiner.

17. If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student can resubmit the dissertation after making necessary improvement in the light of examiners report to the University within a further period of six months.

18. The student shall be permitted to appear in the final examination of Post-graduate degree course only after examiners appointed for the purpose have approved the dissertation.

**2.15 Speciality training if any**

Given under Clause No. 2.10

**2.16 Project work to be done if any:**

As directed by the HOD

**2.17 Any other requirements [CME, Paper Publishing etc.]**

Publication / acceptance of atleast 1 research paper / article in a scholarly journal.

**2.18 Prescribed/recommended textbooks for each subject**

Given under clause No. 2.10

**2.19 Reference books**

Given under clause No. 2.10

**2.20 Journals**

**Print**

1. J-AIM Journal of Ayurveda and Integrative Medicine –ISSN: 0975 9476
2. Journal of Indian Medical Heritage - ISSN: 0975-430X
3. Journal of Research in Ayurveda and Siddha -ISSN: 0254-3478
4. Annals of Ayurvedic Medicine – ISSN 2277-4092
5. Journal of Ayurveda - ISSN:2321-0435
6. International Journal of Applied Ayurved Research - ISSN - 2347 6362
7. Biomedical and Biotechnology Research journal ISSN -2588-9834
8. International Journal of Ayurveda and Alternative Medicine ISSN: 2395-3985
9. International Journal of Ayurvedic and Herbal Medicine ISSN: 2249-546
10. AYU – Research Journal-ISSN: 0974-8520
11. Ancient Science Life – ISSN: 0257-7941
12. Journal of Indian Systems of Medicine – ISSN: 2320-4419
13. Indian Journal of Traditional Knowledge – ISSN 0972-5938
14. Indian Journal of Natural Products & Resources – ISSN: 0976-0504

15. International Journal of Ayurveda Research – ISSN: 0974-925X
16. International Journal of Advanced Ayurveda, Yoga, Unani, Siddha and Homeopathy, ISSN: 2320 – 0251
17. Aryavaidyam, ISSN: 0976-4086
18. JREIM - The Journal of Research and Education in Indian Medicine. ISSN 0970-7700
19. International Journal of Ayurvedic Medicine (IJAM). ISSN – 0976-5921
20. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. ISSN: 2321–6484
21. Planta Medica- Journal of Medicinal Plant and Natural Product Research. ISSN – 0032-0943
22. International Journal of Medicinal and Aromatic Plants (IJMAP). ISSN – 2249-4340
23. Journal of Medicinal Plants Research (JMPR). ISSN: 1996-0875
24. European Journal of Medicinal Plants. ISSN: 2231-0894
25. Journal of Sanskrit Samhita and Siddhanta. ISSN No - 2454-3926
26. Journal of Research in Ayurvedic Sciences. ISSN: 2456-5601
27. Journal of Drug research in Ayurvedic Sciences. ISSN: 2279-0357
28. Journal of Evidence-Based Integrative Medicine. ISSN: 2515690X
29. The Journal of Alternative and Complementary Medicine. ISSN: 1075-5535
30. Journal of Ayurvedic and Herbal Medicine (JAHM). ISSN: 2454-5023
31. Advances in Integrative Medicine. ISSN: 2212-9626
32. International Research Journal of India. ISSN: 2454-8707
33. Journal of Traditional and Folk Practices. ISSN: 2278-5906
34. Kerala Journal of Ayurveda. Published by Akhila Kerala Govt Ayurveda College Adhyapaka Sanghatana. e-mail: ayushkamya@gmail.com
35. Bhishak, Published by VPSV Ayurveda College, Kottakkal.
36. Dhanwantari Journal of Ayurveda – Published by PNNM Ayurveda College, Cheruthuruthy, Shornur, Kerala.
37. Glitters of Ayurveda, Published by Sree Narayana Institute of Ayurvedic Studies and Research, Puthoor, Kollam, E-mail - snayurveda@gmail.com.

### **E-Journals**

1. Ancient Science of Life. eISSN: 2249-9547
2. Indian Journal of Traditional Knowledge (IJTK). eISSN: 0975-1068
3. Journal of Ayush:-Ayurveda, Yoga, Unani, Siddha and Homeopathy. eISSN: 2278-2214
4. Journal of Research in Ayurvedic Sciences. eISSN: 2581-9895
5. Journal of Drug research in Ayurvedic Sciences. eISSN: 2581-8295
6. Journal of Evidence-Based Integrative Medicine. eISSN: 2515690X
7. The Journal of Alternative and Complementary Medicine. eISSN: 1557-7708
8. Journal of Research in Traditional Medicine (JRTM). eISSN: 2455-3166
9. International Journal of Ayurveda and Alternative Medicine eISSN: 2348-0173
10. Journal of Indian Systems of Medicine. eISSN: 2455-5029
11. Indian Journal of Natural Products & Resources. eISSN: 0976-0512
12. Annals of Ayurvedic Medicine. eISSN: 2347-6923
13. Ayurline: International Journal of Research in Indian Medicine. eISSN: 2456-4435
14. Advances in Applied Science Research –E-ISSN- 0976-8610
15. International Research Journal of Pharmacy and Medical Sciences. eISSN: 2481-3277
16. Health Sciences -*healthsciences.ac.in/Open Access Peer Reviewed E-Journal*. Kerala University of Health Sciences, Thrissur.

### **2.21 Logbook**

Shall be maintained in all Post Graduate Courses. All academic work should be maintained and shall be countersigned by concerned HOD.

## **3. EXAMINATIONS**

### **3.1 Eligibility to appear for examinations [including Supplementary]**

A. Preliminary examination:

A minimum of 80% attendance and the candidate should have submitted the Title and Synopsis of the ensuing research work in time.

B. Final examination:

For appearing final year examination 80 % attendance in each theory and practical subjects in 2 nd & 3 rd years separately is required

### **3.2 Schedule of Regular/Supplementary exams**

The University shall conduct not more than two examinations in a year.

### **3.3 Scheme of examination showing maximum marks and minimum marks**

1. Generally two examinations will be conducted in a year. The preliminary examination at the end of one academic year after admission shall be conducted in the following subjects:

#### **Paper I**

Part-A Research Methodology

Part-B Bio/Medical Statistics

#### **Paper II**

Part-A Applied aspects of fundamentals regarding concerned subjects

Part-B Concerned subject

2. The student shall have to undergo training in the department concerned and shall maintain month-wise record of the work done during the last two years of study in the speciality opted by him/her as under.

I Study of literature related to speciality

II Regular clinical training in the hospital for student of clinical subject.

III Practical training of research work carried out in the department, for student of non clinical subject.

IV Active participation in various seminars, symposia and discussions.

V Finalization of topic of dissertation and synopsis.

VI The assessment of the work done during the first year on the above point shall be done at the time of preliminary examination;

If an Examination could not be conducted due to a local Bandh or any other difficulties in conducting Examination, that particular Examination shall be conducted on the next working day.

## **SCHEDULE OF EXAMINATIONS**

a. The preliminary examination shall be conducted at the end of one academic year after commencement of course.

- b. The final examination shall be conducted on completion of three academic years after commencement of PG course.
- c. Examination shall ordinarily be held in the month of June or July and November or December every year.
- d. For being declared successful in the examination, student shall have to pass all the subjects separately.
- e. The student shall obtain minimum 50% marks in Practical and theory subjects separately to be announced as pass.
- f. If a student fails in preliminary examination, he/she shall have to pass before appearing in the final Examination.
- g. If the student fails in theory or practical in the final examination he/she can appear in the subsequent examination without requiring submit a fresh dissertation.
- h. The post- graduate degree shall be conferred after the dissertation is accepted and the student passes the final examination.

### **CONDUCT OF EXAMINATION**

- 1. The final examination (a) dissertation; (b) written papers; and (c) clinical/Practical and oral examination, as the case may be.
- 2. There shall be four theory papers in each speciality and one practical or clinical and viva-voce examination in the concerned speciality or group of sub-specialities selected by the student for special study.
- 3. The student shall have to publish / get accepted at least one Research paper on the basis of his research work in one Journal based on his dissertation and one paper presentation in Regional level Seminar.

### **QUESTION PAPER PATTERN**

Question paper pattern will be as per recommendations of the Board of Studies.  
The pattern is long essay for 20 marks -one question  
Short essay 10 marks - Eight questions  
Total 9 questions for 100 marks

#### **3.4 Papers in each year**

Given under clause No.2.10

#### **3.5 Details of theory exams [include number of papers, duration, type of questions & number of questions and marks]**

Given under clause No. 2.10 & 3.3

#### **3.6 Model question paper for each subject with question paper pattern**

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**Paper I - Research Methodology and Medical Statistics  
(Common for all Specialties)  
(..... scheme)**

**Time: 3 Hours**

**Max. Marks: 100**

- Answer all questions.
- Use only ordinary calculator

**Essay**

**(20)**

1. Develop a clinical research protocol to estimate the prevalence of smoking among High School going boys in Kerala.

**Short Essays**

**(8 x 10)**

2. Write down the steps involved in testing of a hypothesis
3. Discuss the applicability of *Anumana Pramana* in experimental research
4. What is a normal distribution? Explain the peculiarities of a normal distribution
5. Design a Randomized Controlled Trial to find out the effect of Dadimadi Ghrita over Iron tablets in Anaemia in pregnant women.
6. Elaborate case control studies. Explain the peculiarities of a control in the case control study
7. What is literary research? Elaborate its significance in Ayurvedic research
8. What is Manuscriptology? What is its role in the preservation of traditional knowledge?
9. Explain parametric tests

QP CODE: .....

Register No.....

**PG Ayurveda Preliminary Examinations.....**

**(Shalakya)  
(..... scheme)**

**Paper II –Moulika Sidhantha**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Explain the relevant anatomy, relations and communications of the nose and nasopharynx to substantiate the reference 'Nasa hi sirasodwaram'

**Short Essays**

**(8x10=80)**

2. Write the role of Dinacharya in prevention and treatment of Nayana, Sravana, Vadana and Ghranagatarogas
3. Substantiate the role of Jalookavacharana in the treatment of Netraroga.
4. Describe the therapeutic procedure "Moordhataila" in detail
5. Write the ingredients and indications of ,
  - a. Patoladigritam
  - b. Sapthachadadikwatha
  - c. Erandasigrvaditailam
6. Describe NetrarogaNidana and Critically analyse each of them with respect to Dosha, Dooshya and Srotodushti
7. Anatomy and clinical examination of cornea with special description of slit lamp biomicroscopy and pachymetry
8. Write the use of pure tone audiometry and tympanometry in the differential diagnosis of hearing loss. Sketch the findings seen in PTA and tympanometry in conductive hearing loss.
9. Briefly mention the diagnostic and therapeutic uses of any three commonly used mydriatic drops and their pharmacologic action.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Shalakya)  
(..... scheme)**

**Paper I – Shalakya - Netra Roga**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe the general line of management of Netrarogas. Critically analyze how it helps in the Samprapti Vighatana of eye diseases.

**Short Essays**

**(8x10 = 80)**

2. Discuss in detail lacrimal apparatus, importance of Kaneenaka Sandhi and the pathological conditions affecting Kaneenaka Sandhi in brief.
3. Describe various Nayanagata Shalya and their Aharanopaya
4. Explain the concept of Autoimmune disorders of the eye and their management
5. Explain Utklishta Vartma. Critically analyze the four types of Utklishta Vartma along with modern perspective
6. Elaborate Occular manifestations of Diabetes Mellitus
7. Discuss the possible mechanisms of Oculomotor Nerve palsy and its management through Ayurveda.
8. Critically analyze Anterior uveitis and its management as per Ayurveda
9. Describe the etiology, pathogenesis, clinical features, complications, prognosis and the management of Kshatasukla.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Shalakya)**  
**(..... scheme)**

**Paper II – Shalakya – Shiro-Nasa- Karna evum Kantha Roga**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe the differential diagnosis of headache with relevant investigations and elaborate the treatment modalities as per Ayurveda

**Short Essays**

**(8x10 = 80)**

2. “Ajanma maranam Shastam Pratimarshastu Vastivath” Discuss and evaluate
3. Critically analyze and differentiate Ananthavatam and Anyathovatam along with modern perspective
4. Describe the conditions causing ear discharge mentioned in Ayurveda and interpret similar conditions as per modern view
5. Explain the utility of Chaturvidha Chikitsa in the management of Nasarogas
6. Etiology, Pathogenesis, prodromal symptoms, clinical features, complications and general line of management of Pratisyaya.
7. Analyze Galavidradhi and its management – Ayurvedic and modern perspective
8. Kapalagata Rogas
9. Voice disorders due to laryngeal pathology and their Ayurvedic management.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Shalakya)  
(..... scheme)**

**Paper III – Shalakya –Mukha Danta Roga**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Describe the process of teeth eruption, time and types of dentition, systemic diseases occurring during teeth eruption, their prevention and management

**Short Essays**

**(8x10 = 80)**

2. Explain the procedure of Tooth extraction. Describe the technique of Jalandhara Bandha and discuss its merits and demerits.
3. Describe the general etiology, pathogenesis, types, prognosis and management of Sarvasara Mukharogas.
4. Describe painless pathological conditions of Talu and their management strategies.
5. Elaborate bleeding disorders of gum in Ayurveda
6. Critically analyze and Shitadanta and Dantaharsha
7. Describe the etiology, pathogenesis, clinical features, complications and management of Dental caries.
8. Utility of Ashtavidha Shastrakarma in Oshtarogas.
9. Write short notes on Adhijihwika and Upajihwika.

QP CODE: .....

Register No.....

**Final Year PG Ayurveda Degree Examinations.....**

**(Shalakya)  
(..... scheme)**

**Paper IV – Shalakya – Shalakya Vishishtha Chikitsa Vigyan**

**Time: 3 hrs**

**Max Marks: 100**

- Answer all questions

**Essay**

**(20)**

1. Discuss the medico legal aspects concerned with Ophthalmology and Dentistry.

**Short Essays**

**(8x10 = 80)**

2. Evaluate different types of Anjana and their implications in eye diseases
3. Brief up on National programmes for deafness and the Role of Ayurveda in its prevention.
4. Substantiate the role of Dhoomapana in Shalakyarogas.
5. Explain the role of Panchakarma Chikitsa in Nasarogas
6. Critically evaluate Linganasha Shastrakriya mentioned by Acharya Susruta and compare with current cataract extraction technique
7. Action of Kabala and Gandusha in Mukha Danta Rogas
8. Imaging modalities in Head trauma
9. Standard Operative Procedure for Parisheka Kriyakalpa.

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**3.7 Internal assessment component**

Not applicable

**3.8 Details of practical/clinical exams [include duration, type of cases/questions & number of questions and marks]**

Given under clause No.2.10

**3.9 Number of examiners needed (Internal & External) and their qualifications**

The preliminary examination and final examination will be held in practical, clinical and oral examinations. The final examination shall be conducted by a team of 4

examiners out of which one should be external from out of the state. The examiners should be a minimum of Associate Professor Level or should have minimum 5 years PG teaching experience.

Preliminary Examination - 2 examiners shall be there to conduct the examination out of which one shall be from external zone.

Final year - four examiners out of which 2 should be external but a minimum of 3 examiners should be for final year PG Ayurveda Examination.

### **3.10 Details of viva: division of marks**

Viva-voce shall be conducted separately by each examiner and coordinated by the senior most internal examiner. The same person shall finalize the mark sheet of practical and viva-voce examinations, in consultation with the other examiners.

1. The examination shall be aimed to test the clinical acumen, ability and working knowledge of the student in the practical aspect of the speciality and his/her fitness to work independently as a specialist.

2. The clinical examination shall aim at a careful assessment of the competence of the student, so that his/her familiarity with Ayurveda and scientific literature in the speciality could be judged.

3. The viva-voce, part of the practical examination shall involve extensive discussion on any aspect of subject/speciality.

### **4. INTERNSHIP**

Not applicable

### **5. ANNEXURES**

#### **5.1 Check Lists for Monitoring**

Log Book, Seminar Assessment etc. to be formulated by the curriculum committee of the concerned Institution

### **Dissertation**

(1) Central Scientific Advisory Post Graduate Committee appointed by the Apex Council of Ayurveda shall suggest the areas of Research and topics to be focused every academic year to make campaigning of evidence based Ayurveda to the need of global standards and achieve publications and the same shall be followed by University Committee while approving the Dissertation title.

(2) The title of the dissertation along with the synopsis, with approval of the Ethics Committee constituted by the institute as per regulations of concerned recognised University, shall be submitted to the University within a period of six months from the date of admission to the post-graduate course.

(3) If the student fails to submit the title of dissertation and synopsis within the period specified under sub regulation (2), his terms for final post-graduate course shall be extended

for six months or more in accordance with the time of submission of the synopsis to the University.

(4) The synopsis of the proposed scheme of work shall indicate the expertise and action plan of work of the student relating to the proposed theme of work, the name of the department and the name and designation of the guide or supervisor and co-guide (if any). The University shall approve the synopsis not later than three months after submission of the synopsis.

(5) A Board of Research Studies shall be constituted by the University for approving the title.

(6) The University shall display the approved synopsis of dissertation on their website.

(7) The subject of every dissertation shall be research oriented, practical oriented, innovative and helpful in the development of Ayurveda system and the subject of the dissertation shall have relation with the subject matter of the specialty.

(8) Once the title for dissertation is approved by the Board of Research Studies of the University, the student shall not be allowed to change the title of the proposed theme of work without permission of the University.

(9) No student shall be allowed to submit the dissertation before six months of completion of course and the student shall continue his regular study in the institution after submission of dissertation to complete three years.

(10) The dissertation shall contain the methods and data of the research carried out by the student on the problem selected by him and completed under the guidance of the guide or supervisor approved by the University.

(11) The dissertation shall consist of critical review of literature, methodology, results of the research, discussion on the basis of research findings of the study, summary, conclusion, and references cited in the dissertation shall be suitable for publication.

(12) The dissertation shall consist of not less than forty thousand words.

(13) The dissertation shall contain, at the end, a summary of not more than one thousand and five hundred words and the conclusion not exceeding one thousand words.

(14) The guide or supervisor shall be a person of status of a Professor or Associate Professor.

(15) Assistant Professor having five years University approved teaching experience in the subject concerned shall eligible for guide or supervisor.

(16) Five copies of the bound dissertation along with a certificate from the supervisor or guide shall reach the office of the Registrar of the University four months before the final examination.

(17) The dissertation shall be assessed by two external examiners and two internal examiners appointed by the University.

(18) The dissertation shall be accepted only after the approval of examiners appointed under sub-regulation (17) and in case of disapproval by one external examiner the dissertation shall be referred to third external examiner approved by the University concerned.

(19) If the dissertation is not accepted by two external examiners, the same shall be returned to the student with the remarks of the examiners and the student shall resubmit the dissertation after making necessary improvement in the light of examiners' report to the University within a further period of six months.

(20) The student shall be permitted to appear in the final examination of post-graduate degree course only after approval of the dissertation by the examiners.

(21) Inter-disciplinary research may be done by co-opting the guide or supervisor from the concerned specialty.

(22) If a para-clinical or pre-clinical subject student takes a thesis topic involving clinical trials then he/she shall work under co-guide of a clinical teacher of the speciality concerned for preparing the thesis

### **Guidelines for Preparation of PG Dissertation**

#### **Title pages**

1. Title Page: No decorations, Avoid Dr., pictures, boxes, tables, borders etc.
2. Abstract: keep one page, include introduction to conclusion
3. Contents: Add sections and subsections, put page numbers, keep simple
4. Tables and Figures: List separately, clearly numbered with unique titles.
5. Abbreviations: List main abbreviations or acronyms. Avoid common like ESR
6. Acknowledgement: Fairly brief, no history telling, 1 – 2 pages only.

#### **Introduction**

1. Explain the origin of the idea for the research.
2. Why this particular topic being selected
3. What is the significance?
4. Previous studies on the same topic
5. Mention lacunae in current knowledge.
6. Hypothesis, if any
7. State Aims and Objectives
  - a) State in clear, precise and logical manner
  - b) Begin with a verb
  - c) State in a neutral manner
  - d) Avoid prejudgment

#### **Review of Literature**

1. Aims to establish the Academic and Research areas of the topic.
2. Collect a reasonable coverage of the subject by summarizing the texts, articles, journals etc.
3. Review the literature connected to all key concepts.
4. Detailed analysis of the text book is not needed.
5. Mere copy of text books and commentaries should be avoided
6. Collect largely the reports of research relevant to the subject matter
7. Present one paragraph of the study with full reference.

#### **Methodology**

1. Settings
2. Type of study (Study design)
3. Sampling – Population, sample, sampling techniques and size.
4. Details of materials.
5. Details of intervention
6. Process of data collection – explain pilot study
7. Details of data analysis
8. Strength and weakness of the methodology
9. Ethical considerations

### **Observations & Results**

1. Logical organization of observations in readily identifiable sections.
2. Logical organization of effect of intervention
3. Presentation of statistical analysis
4. Appropriate use of charts, tables, graphs, figures etc.

### **Discussion**

1. Comparison of baseline data in different groups.
2. Justification and reasoning of observations with prevailing academic and research data.
3. Justification and reasoning of outcome with original thoughts.
4. Interpretation of implications of outcome
5. Statement of limitations of interpretations
6. Mention of unanswered questions.
7. Mention of new questions raised

### **Summery and Conclusion**

1. State original contributions
2. Limitations of the study
3. Recommendations for further study.

### **Annexure**

1. Required annexure and appendices

### **Miscellaneous**

#### **Length of thesis**

1. Usually 150 – 250 pages. (CCIM -not less than 40,000 words)
2. Introduction 5%
3. Review of literature 25 %
4. Methodology 15%
5. Observation and results 25%
6. Discussion 20%
7. Summery & Conclusion 5%
8. Others 5%

#### **Lay out**

1. Font – Arial / Times New Roman
2. Size – 11/ 12
3. Heading size 14 / 16 – Bold
4. Avoid underlines
5. Line Spacing – Double or 1.5
6. Page numbering – Arabic
7. Title pages – Roman
8. Begin new chapter in new page only
9. Use only single side of the page
10. Main text – No decorations, no borders, no boxes. Be simple and straight forward.
11. Avoid repetition in data presentations. Select the most convincing way of presentation.

12. Avoid first person
13. Use third person or passive voice.
14. Italicizing – Sanskrit terms, title of books, journals and other academic works.
15. Capitalization – Name of academic organizations eg. KUHS.
16. Use the term Dissertation for Masters and Thesis for Doctoral research.

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