

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



**Master of Dental Surgery (MDS)**  
**Oral and Maxillofacial Pathology**  
**and Oral Microbiology**  
**Course Code: 246**  
**(2021-2022 Academic year onwards**  
**Modified as per DCI MDS Course (3<sup>rd</sup> Amendment)**  
**Regulations 2019)**

## **2. COURSE CONTENT**

### **2.1 Title of course:**

MDS ORAL AND MAXILLOFACIAL PATHOLOGY AND ORAL MICROBIOLOGY

### **2.2 . Objectives of course**

#### **1. Goals**

The goals of postgraduate training in various specialities are to train the BDS graduate who will:

- Practice respective specialty efficiently and effectively, backed by scientific knowledge and skill.
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing professional education in the specialty and allied specialties irrespective of whether in teaching or practice.
- Willing to share the knowledge and skills with any learner, junior or a colleague.
- To develop the faculty for critical analysis and evaluation of various concepts and views, to adopt the most rational approach.

#### **2. Objectives**

The objective is to train a candidate so as to ensure higher competence in both general and special area of interest and prepare him for a career in teaching, research and specialty practice. A candidate must achieve a high degree of clinical proficiency in the subject matter and develop competence in research and its methodology as related to the field concerned.

The above objectives are to be achieved by the time the candidate completes the course.

The objectives may be considered as under –

1. Knowledge (Cognitive Domain)
2. Skills (Psychomotor Domain)
3. Human values, ethical practice and communication abilities.

#### **2.1. Knowledge**

- Demonstrate understanding of basic sciences relevant to the specialty.
- Describe etiology, pathophysiology, principles of diagnosis and management of common problem within the specialty in adults and children.
- Identify social, economic, environmental and emotional determinants in a given case and take them into account for planning treatment.
- Recognize conditions that may be outside the area of specialty/competence and to refer them to an appropriate specialist.
- Update knowledge by self-study and by attending courses, conferences and seminars relevant to specialty.
- Undertake audit; use information technology and carryout research both basic and clinical with the aim of publishing or presenting the work at various scientific gatherings.

#### **2.2. Skills**

- Take a proper clinical history, examine the patient, perform essential diagnostic procedures and order relevant tests and interpret them to come to a reasonable diagnosis about the condition.

- Acquire adequate skills and competence in performing various procedures as required in the specialty.

### **2.3. Human values, ethical practice and communication abilities**

- Adopt ethical principles in all aspects of practice.
- Foster professional honesty and integrity.
- Deliver patient care, irrespective of social status, caste, creed, or religion of the patient.
- Develop communication skills, in particular skill to explain various options available in management and to obtain a true informed consent from the patient.
- Provide leadership and get the best out of his team in congenial working atmosphere.
- Apply high moral and ethical standards while carrying out human or animal research.
- Be humble and accept the limitations in his knowledge and skill and to ask for help from colleagues when needed.
- Respect patient's rights and privileges including patient's right to information and right to seek a second opinion.

### **2.3 Medium of instruction:**

The medium of instruction for the course shall be English.

### **2.4 Course outline**

This branch deals with the nature of oral diseases, their causes, processes and effects. It relates the clinical manifestation of oral diseases to the physiologic and anatomic changes associated with these diseases.

### **2.5 Duration**

The course shall be of **three years** duration. All the candidates for the degree of MDS are required to pursue the recommended course for at least three academic years as full time candidates in an institution affiliated to and approved for Postgraduate studies by KUHS, observing the norms put forward by the DCI.

- There will be no reduction for the course duration for any of the students including service candidates, diploma holders and those who have done senior house surgeoncy or equivalent research experience.
- No student shall be permitted to complete the course by attending more than 6 continuous years.
- A candidate selected for admission in a Dental College is obliged to follow the curriculum, rules and regulations as approved by the Dental Council of India and the University. Curriculum, rules or regulations are subject to changes from time to time.

### **2.6 Syllabus**

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

## **Syllabus for MDS Part I Examination**

### **PAPER 1 :Applied Basic Sciences:**

Applied anatomy, Physiology (General and oral), Cell Biology, General Histology, Biochemistry, General Pathology, General and Systemic Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (oral and dental histology), Biostatistics and Research Methodology

### **Applied General Anatomy**

Osteology of Head and Neck

Muscles of mastication

Innervation  
Muscles of Facial Expression  
blood supply & drainage  
Cranial Nerves (5,7,9)  
Paranasal Air Sinuses.  
Palate.  
Sublingual gland  
Submandibular gland.  
Anatomy of Tongue – muscles, blood and nerve supply.  
TM Joint – Movements, relations, anomalies and age changes.  
Ankylosis  
Age changes.  
Parotid gland

### **Embryology**

Development of face  
Development of paranasal air sinuses  
Pharyngeal apparatus  
Development of tooth in detail and the age changes  
Development of salivary glands  
Development of palate  
Development of tongue  
Congenital anomalies of face

### **Genetics applied to dentistry.**

Modes of Inheritance  
Chromosomal and genetic anomalies

### **Physiology**

#### **Blood and Lymph**

Composition & functions of blood,  
Plasma, plasma functions, Plasma proteins - Types, concentration, functions & variations, Erythrocyte: Morphology, functions and variations.  
Erythropoiesis and factors affecting erythropoiesis  
ESR- factors affecting, variations and significance.  
Haemoglobin - Normal concentration, method of determination and variation in concentration, functions  
Anaemia - Definition, classification, life span of RBC's destruction of RBC's , formation & fate of bile pigments, Jaundice - types.  
Hemolysis and Fragility of RBC  
Leucocytes: Classification, number, percentage, distribution morphology, properties, Functions & variation. Role of lymphocytes in immunity, life span & fate of leucocytes.  
Thrombocytes - Morphology, number, variations, function.  
Haemostasis – Role of vasoconstriction, platelet plug formation in haemostasis, coagulation factors, intrinsic & extrinsic pathways of coagulation, clot retraction.  
Fibrinolytic system.  
Tests of haemostatic function, platelet count, clotting time, bleeding time, prothrombin time - normal values, method & variations.  
Anticoagulants – mechanism of action.  
Hemorrhage  
Bleeding disorders.

Blood groups: ABO & Rh system, method of determination, importance, indications & dangers of blood transfusion, blood substitutes.

Blood volume: Normal values, variations.

Functions of reticulo-endothelial system.

Specific gravity, Packed cell volume, Methods of estimation

Blood Indices - MCV, MCH, MCHC - definition, normal values, variation.

Leucopoiesis

Thrombopoiesis

Hydrogen ion concentration of blood.

Homeostasis, Fluid and Electrolyte Balance, Acid Base Balance.

Osmotic and Oncotic pressure.

Lymph – Composition and Functions – Comparison with Blood..

### **Gastro - Intestinal Tract**

composition, functions and regulation of:

Saliva

Gastric juice

Pancreatic juice

Bile

Intestinal juice

Mastication

Deglutition

### **Endocrine System**

Growth hormone

Thyroid hormones Parathyroid hormones

Calcium homeostasis

## **BIOCHEMISTRY**

### **Nucleic acids**

DNA/RNA-outline of structure

Transcription/translation steps of protein synthesis, inhibitors of protein synthesis, regulation of gene function

### **Energy Metabolism**

Basal metabolic rate

Vitamins -specifically vitamin A, vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

Minerals

### **General Histology**

Different types of epithelium

Bone

Cellular elements of blood

Lymphatic system

Muscle

Neural tissue

### **Oral and Dental Anatomy**

Morphology of individual teeth in primary dentition with variations.

Morphology of individual teeth in permanent dentition.

Anatomy of pulp canal and their variations.

Occlusion  
Dental arch formation  
Development of occlusion from gum pads  
Deciduous, mixed and permanent dentition.  
Sequence of eruption.  
Age changes in the dentition.  
Oral and dental developmental anomalies.  
Amelogenesis imperfecta.  
Dentinogenesis imperfecta.  
Tooth numbering systems

### **Oral Histology**

Structure of the oral tissues.  
Cytoskeleton  
Cell junctions  
Hard tissue formation and destruction.  
Development of the tooth and its supporting tissues.  
Bone  
Dentinogenesis  
Dentin Pulp  
Amelogenesis  
Enamel structure  
Cementum  
Periodontium  
Physiologic tooth movement  
Eruption and shedding  
Salivary glands  
Oral mucosa  
Temporomandibular joint  
Repair and regeneration of dental tissue  
Prenatal facial growth and development  
Postnatal facial growth and development.

### **General Pathology**

Introduction – pathology of the cell  
Cellular adaptation, cellular degeneration  
Apoptosis and necrosis  
Gangrene  
Pathologic calcification  
Intracellular accumulations – fatty changes, deposition of proteins, glycogen  
Acute inflammation  
Vascular events of inflammation  
Cellular events of inflammation  
Chronic inflammation  
Mediators of inflammation  
Exudate and transudate  
Healing, regeneration, repair mechanisms  
Wound healing.  
Healing by primary intention  
Healing by secondary intention  
Fracture healing  
Factors influencing healing process, complications  
Immunological mechanisms in disease

Humoral & cellular immunity  
Hypersensitivity and allergy  
Autoimmunity.  
Normal water and electrolyte balance  
Derangements of body fluids  
Bleeding disorders  
Hemorrhage and shock  
Metabolic disorders – kwashiorkor, marasmus  
Hypervitaminosis, hypovitaminosis,  
Rickets, osteomalacia.  
Physical and chemical injuries.  
Atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia  
Premalignant lesions.

### **Microbiology**

Infection Control  
Sterilization with special reference to dental office. Sterilization and Asepsis.  
Hand washing and hand hygiene.  
Personal protective equipments.  
Handling of sharp instruments.  
Needle-stick injury, exposure to body fluids.  
Post-exposure prophylaxis.  
Management and disposal of waste.  
Communicable diseases and notification.  
Infection and resistance-defense mechanisms  
Immunisations schedule, Collection of materials,  
Experimental animals & hospital infections.

**Basic Immunology** – Cellular and humoral Immunity, Antigen and Antibody System,  
Hypersensitivity, Autoimmune diseases.

### **Biostatistics**

Introduction, definition and branches of biostatistics  
Collection of data  
Sampling- types  
Bias and errors  
Compiling data-graphs and charts  
Measures of central tendency (mean, median and mode)  
Standard deviation  
Tests of significance (chi square test, t-test and z-test)  
Null hypothesis

### **Ethics in Dentistry**

Introduction to ethics:  
What is ethics?  
What are values and norms?  
How to form a value system in one's personal and professional life?  
Hippocratic oath.  
Ethics of the Individual  
The patient as a person  
Right to be respected  
Truth and confidentiality

Autonomy of decision  
Doctor patient relationship  
Profession Ethics  
Code of conduct  
Contract and confidentiality

## **Syllabus for MDS Part II Examination**

### **PAPER I: Oral pathology, Oral Microbiology and Immunology and Forensic Odontology .**

1. Developmental defects of the oral and maxillofacial region.
- 1.2. Abnormalities of the teeth
- 1.3. Pulpal and periapical diseases
- 1.4. Bacterial infections
- 1.5. Fungal and protozoal diseases
- 1.6. Viral diseases
- 1.7. Physical & chemical injuries
- 1.8. Allergies and immunological diseases
- 1.9. Epithelial pathology
- 1.10. Salivary gland pathology
- 1.11. Soft tissue tumours
- 1.12. Haematologic disorders
- 1.13. Bone pathology
- 1.14. Odontogenic cyst and tumours
- 1.15. Dermatologic diseases
- 1.16. Oral manifestations of systemic disease
- 1.17. Facial pain and neuromuscular disease
- 1.18. Forensic odontology
- 1.19. Differential diagnosis of oral and maxillofacial lesions
- 1.20. Oral biopsies
- 1.21. Oral cytology
- 1.22. Dental caries
- 1.23. Oral bacterial flora
- 1.24. Basic immunology and virology
- 1.25. Lymph node and reticulo endothelial pathology
- 1.26. Dermatopathology
- 1.27. Radiation pathology
- 1.28. Regressive alternations of the teeth
- 1.29. Spread of oral infection
- 1.30. Healing of oral wounds
- 1.31. Oral aspects of metabolic disease
- 1.32. Disease of nerve and muscle
- 1.33. Diagnostic lab procedure

## **2. ORAL MICROBIOLOGY AND IMMUNOLOGY**

- 2.1. Normal oral microbial flora
- 2.2. Defense mechanism of the oral cavity.
- 2.3. Microbiology and immunology of Dental Caries and Periodontal diseases
- 2.4. Dental Caries – Introduction, Epidemiology, Microbiology, cariogenic bacteria including properties, acid production in plaque, development of lesion, response of dentin-pulp unit,



histopathology, Root caries, Sequelae and Immunology.

2.5.Tumor Immunology

2.6. Infections of the pulp and periodontal tissues

2.7. Oral Sepsis and Bacteremia

2.8.Microbial Genetics

### **3. FORENSIC ODONTOLOGY**

3.1.Legal procedures like inquest, medicolegal evidences, post mortem examination of violence around the head and neck region, identification of deceased individual using teeth and other oral tissues.

3.2.Bite marks, Rugae patterns and lip prints.

3.3.Saliva and its use in forensic identification

## **PAPER II : Laboratory techniques and Diagnosis and Oncology**

1. Principles and practice of microscopy and photo microscopy

2. Types of biopsies – principles and methods

3. Principles and techniques in routine laboratory procedures in the identification of various oral disease

4. Investigations and Lab Procedures in Forensic odontology

5. Fixation and fixatives

6. Tissue processing, microtomy and paraffin sections

7. Frozen and related sections

8. The theory of staining

9. The haematoxylin and eosin

10. Connective tissues and stains

11. Proteins and nucleic acids

12. Amyloid

13. Carbohydrates

14. Lipids

15. Pigments and minerals

16. Micro-organisms

17. Bone

18. Cytoplasmic granules, organelles and special tissues

19. Enzyme histochemistry and Immunohistochemistry

20. In-situ hybridization

21. Diagnostic cytopathology

22. Resin embedding media

23. Electron microscopy

24. Quantification in histopathology

25. Safety in histopathology lab

26. Audit in histopathology.

27.Museum techniques

### **Oncology**

1. The molecular biology of cancer

2. Carcinogenesis

3.Recent advances in oral oncology

4. Aetiology, epidemiology and prevention of cancer

## **PAPER III –ESSAY- Descriptive and analyzing type question**

A 3 hour essay paper, consisting of three descriptive and analyzing type of questions, on any of the

major topics with emphasis on recent advances.

### **Teaching / Learning Activities:**

### **Broad Outline of Theoretical, Clinical and Practical Courses**

#### **I MDS:**

##### **1. Biostatistics and Research Methodology:**

- Basic principles of biostatistics and study as applied to dentistry and research
- Collection/ organization of data/ measurement scales / presentation of data and analysis
- Measures of central tendency
- Measures of variability
- Sampling and planning of health survey
- Probability, normal distribution & indicative statistics
- Estimating population values
- Tests of significance(parametric/non-parametric qualitative methods)
- Analysis of variance
- Association, correlation and regression

##### **Approach:**

- Didactic Lectures

##### **2. Applied Gross Anatomy of head and neck, histology and genetics :**

- Temporo-mandibular joint
- Trigeminal nerve and facial nerve
- Muscles of mastication
- Tongue
- Salivary glands
- Nerve supply, blood supply, lymphatic drainage & venous drainage of oro-dental tissues
- Development of face, palate, mandible, maxilla, tongue and applied aspects of the same
- Development of teeth & dental tissues and developmental defects of oral and maxilla-facial region & abnormalities of teeth
- Maxillary sinus
- Jaw muscles and facial muscles
- Introduction to genetics
- Modes of inheritance
- Chromosomal anomalies of oral tissues & single gene disorders

##### **Approach:**

- Didactic Lectures
- Postings in the Department of Anatomy for dissection of Head, Face and Neck

##### **3. Physiology (General & Oral) :**

- Saliva
- Pain
- Mastication
- Taste
- Deglutition
- Wound healing
- Vitamins ( influence on growth, development and structure of oral soft and hard tissues & paraoral tissues )
- Calcium metabolism
- Theories of mineralization
- Tooth eruption and shedding
- Blood and its constituents
- Hormones (influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)

##### **Approach:**

- Didactic Lectures

#### **4. Cell Biology :**

- Cell structure and function (ultra structural & molecular aspects)
- Intercellular junctions
- Cell cycle and division
- Cell cycle regulators
- Cell–cell & cell-extracellular matrix interactions
- Detailed molecular aspects of DNA,RNA and intracellular organelles, transcription and translation and molecular biology techniques

#### **Approach:**

- Seminars & Didactic Lectures

#### **5. General Histology :**

- Light & electron microscopy considerations of epithelial tissues and glands,bone.
- Light & electron microscopy considerations of hemopoetic system, lymphatic system, muscle, neural tissue, endocrinal system ( thyroid, pituitary, parathyroid)

#### **Approach:**

- Didactic Lectures
- Postings in the Department of Anatomy & Histology for slide discussion
- Record book to be maintained

#### **6. Biochemistry :**

- Chemistry of carbohydrates, lipids and proteins
- Methods of identification and purification
- Metabolism of carbohydrates, lipids and proteins
- Biological oxidation
- Various techniques-cell fractionation and ultra filtration, centrifugation, electrophoresis, spectrophotometry and radioactive techniques

#### **Approach:**

- Didactic Lectures
- Postings in the Department of Biochemistry to familiarize with various techniques
- Record book to be maintained

#### **7. General Pathology :**

- Inflammation and chemical mediator
- Thrombosis
- Embolism
- Necrosis
- Repair
- Degeneration
- Shock
- Hemorrhage
- Pathogenic mechanisms at molecular level
- Blood dyscrasias
- Carcinogenesis and neoplasia

#### **Approach:**

- Didactic Lectures & Seminars
- Postings in the Department of General Pathology& Forensic Medicine

#### **8. General Microbiology :**

- Definitions of various types of infections
- Routes of infection and spread
- Sterilization ,disinfection and antiseptics
- Bacterial genetics
- Physiology, growth of microorganisms

#### **Approach:**

- Didactic Lectures & Seminars

### **9. Basic Immunology :**

- Basic principles of immunity, antigen and antibody reaction
- Cell mediated and humoral immunity
- Immunology of hypersensitivity
- Immunological basis of auto immune phenomena
- Immunodeficiency with relevance to opportunistic infections
- Basic principles of transplantation and tumor immunity

#### **Approach:**

- Didactic Lectures & Seminars

### **10. Systemic Microbiology / Applied Microbiology :**

Morphology, classification, pathogenicity, mode of transmission, methods of prevention, collection and transport of specimen for laboratory diagnosis, staining methods, common culture media, interpretation of laboratory reports and antibiotic sensitivity tests.

- Staphylococci
- Streptococci
- Corynebacterium diphtheria
- Mycobacteria
- Clostridia, bacteroids & fusobacteria
- Actinomycetales
- Spirochetes
- General structure, broad classification of viruses, pathogenesis, pathology of viral infections
- Herpes virus
- Hepatitis virus
- HIV
- General properties of fungi
- Superficial, subcutaneous, deep opportunistic infections
- General principles of fungal infections, method of collection of samples, diagnosis and examination of fungi

#### **Approach:**

- Didactic Lectures & Seminars
- Postings in the Department of Microbiology to familiarize with relevant diagnostic methods
- Record book to be maintained

### **11. Oral biology (Oral and Dental Histology) :**

- Study of morphology of permanent and deciduous teeth
- Structure and function of oral, dental and paraoral tissues including their ultra structure, molecular and biochemical aspects

#### **Approach:**

- Didactic Lectures & Seminars
- Slide discussion on histological appearance of normal oral tissues
- Record book to be maintained

### **12. Basic Histo-Techniques and Microscopy :**

- Routine hematological tests and clinical significance of the same
- Biopsy procedures for oral lesions
- Tissue processing
- Microtome and principles of microtomy
- Various stains used in histopathology and their applications
- Microscope, principles and theories of microscopy
- Light microscopy and various other types including electron microscopy
- Fixation and fixatives
- Ground sections and decalcified sections
- Cytological smears

#### **Approach:**

- Didactic Lectures & Seminars

- Postings in Clinical Pathology and Microbiology for relevant training
- Preparation of Ground and decalcified sections, tissue processing, sectioning and staining
- Tooth Carving (Permanent Dentition)
- Record book to be maintained

## **II MDS:**

### **1. Oral and Dental Pathology:**

- Developmental disorders of oral and paraoral structures
- Potentially malignant disorders
- Benign and malignant tumors of the oral cavity
- Odontogenic cysts and tumors
- Pathology of salivary glands
- Regressive alterations of teeth
- Bacterial, fungal, viral and protozoal infections of the oral cavity
- Dental caries
- Diseases of pulp and periapical region
- Spread of oral infection
- Healing of oral wounds
- Physical and chemical injuries of oral cavity
- Oral aspects of metabolic diseases
- Diseases of bones and joints
- Diseases of skin and mucous membrane
- Diseases of periodontia
- Diseases of blood and blood forming organs
- Diseases of nerves and muscles
- Oro-facial pain
- Immunological diseases of oral cavity including tumor immunology
- Molecular pathology
- Oral Microbiology

#### **Approach:**

- Didactic Lectures & Seminars
- Postings in the Department of Dermatology of a Medical College
- Postings in a Cancer Centre

### **2. Basic histo-techniques and microscopy:**

- Enzyme histochemistry
- Principles, techniques and applications of immunofluorescence
- Principles, techniques and applications of immunohistochemistry
- Preparation of frozen sections
- Museum set up
- Quality control
- Animal models

#### **Approach:**

- Didactic Lectures & Seminars
- Training to be imparted in the Department or in other institutions having the facility
- Visit to the centre of animal experimentation to be familiarize with laboratory techniques, upkeep and care of animals
- Record book to be maintained

### **3. Recent Molecular Techniques:**

- Basic principles, techniques and applications of –
- PCR
- BLOTS
- Hybridization
- Recombinant DNA technology
- Micro array

- DNA sequencing
- Cell culture and cloning

**Approach:**

- Didactic Lectures & Seminars
- Training to be imparted in the Department or in other institutions having the facility
- Record book to be maintained

**4. Recording of Case History and Clinico-Pathological Discussions:**

**Approach:**

- Postings in the Department of Oral Medicine, Diagnosis & Radiology
- Record of minimum 10 case histories to be maintained

**5. Histopathology – Slide discussion:**

- Record book to be maintained

**III MDS:**

- Forensic odontology
- Giant cell lesions
- Clear cell lesions
- Round cell lesions
- Spindle cell lesions
- Pigmented lesions
- Fibro-osseous lesions
- Mechanism of formation and expansion of cysts of orofacial region
- Mechanism of growth and metastasis of tumors
- Lab diagnosis of bacterial infections
- Lab diagnosis of viral infections
- Lab diagnosis of fungal infections
- Hamartomas
- Phakomatoses
- Vascular tumors of oro-facial region
- Genodermatoses
- Tumor markers
- Histogenesis of salivary gland tumors
- Tumor angiogenesis
- Concept of premalignancy
- Blue cell lesions
- Molecular basics of oral squamous cell carcinoma
- Matrix remodelling in pathological condition
- Etiopathogenesis of developmental defects of teeth
- Viral oncogenesis
- Lesions associated with impacted and missing teeth
- Syndromes affecting oro-facial region
- Hereditary oral defects
- Techniques to assess the prognosis of neoplastic lesions
- Vesiculo-bullous lesions
- Lymphoreticular malignancy
- Haemopoietic malignancy
- Micronutrients
- Oral aspects of metabolic disorders
- Hormones and oro-maxillofacial lesions
- Matrix metalloproteinases
- Current concepts in HIV related oral diseases
- Current concepts in OSMF
- Epithelial –connective tissue interaction
- Stem cell research

**Approach:**

- Didactic Lectures & Seminars
- Postings in the Department of Forensic Medicine / Sciences
- Record book to be maintained

#### **Monitoring Learning Progress:**

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring should be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment is done using checklists that assess various aspects. Checklists are given in Section IV.

### **2.7 Total number of hours**

As per the instruction given by the DCI

### **2.8 Branches if any with definition**

Oral Pathology and Microbiology

### **2.9 Teaching learning methods**

#### **Method of Training**

The training of a postgraduate student shall be full time but graded responsibilities in the management and treatment of patients entrusted to his/her care. The participation of the students in all facets of educational process is essential. Every candidate should take part in seminars, group discussions, case demonstrations, clinics, journal review meetings, and clinical meetings. Every candidate shall be required to participate in the teaching and training programme of undergraduate students and interns. Training should include involvement in laboratory and experimental work, and research studies.

Every Institution undertaking Post Graduate training programme shall set up an Academic cell or a Curriculum Committee, under the chairmanship of a Senior faculty member, which shall work out the details of the training programme in each speciality in consultation with other Department faculty staff and also coordinate and monitor the implementation of these training Programmes.

Based on the above guidelines for a structured training programme for postgraduate courses, the basic tenets of a successful postgraduate teaching programme, are detailed under the following heads.

- **Formal Lectures** by the faculty on varied subjects including general areas and systems. Both senior and junior faculty can do this. However, the number of these classes should be maintained of low levels to encourage self-learning.
- **Symposia / Seminars** form an integral part of PG learning. A monthly symposium will generate approximate 30-35 symposia / course. These symposia can include department faculty and HODs as chairpersons and maximum involvement of both students and faculty should be ensured.
- **Clinical Discussions** form the core of PG training and can be assigned to various clinical units on rotating basis. However other faculty could also actively participate in the discussion. The discussions must be 3-4/week. One suggestion is to score the performance of the candidate by a small panel of faculty and convey the scores to the candidate / PG at the end of the session.
- **Journal Club /Clinical Club** should be conducted at least once in a week in each postgraduate department. Journal clubs not only imparts new information but also trains

the candidate to objectively assess and criticize various articles which come out and should be useful in ensuring evidence based dentistry.

- **Guest Lectures** can be integrated into the PG program at least once in a month. Even the retired faculty can be invited for delivering the lectures and will ensure importing of greater wisdom to the candidates.
- **Orientation Classes** for newcomers should also be incorporated. These classes can even be assigned to junior faculty/senior PGs.
- **Clinical posting.** Each PG student should work in the clinics on regular basis to acquire adequate professional skills and competency in managing various cases to be treated by a specialist.
- **Clinico Pathological Conferences** should be held once a year involving the faculties of Oral Medicine and Radiology, Oral Pathology and concerned clinical department. The student should be encouraged to present the clinical details, radiological and histopathological interpretations and participation in the discussions.
- **Rotation postings in other departments** should be worked out by each department in order to bring in more integration between the speciality and allied fields.
- **Periodical Quiz** can be both informative and entertaining and should be encouraged and planned.
- **Computer Training and Internet Applications** are now becoming a must for both faculty and students. These areas should be strengthened as a next step. There can be a sort of internet information club in the departments.
- **Conferences/CDEs** – All postgraduate students should be encouraged to attend conferences and CDEs. They should also be asked to present papers wherever appropriate and should be rewarded by assigning scores for them.
- **Publication of scientific papers** – It is desirable and advisable to have at least two publications in the State/National/International indexed dental journals.
- **Involvement in Teaching Activity** – PG students can be assigned the job of teaching the undergraduate students and these will definitely improve the teaching skills in the postgraduate students.

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

Present in clause 2.6

## **2.11 No: of hours per subject**

As per the DCI guidelines

## **2.12 Practical training**

Present in clause 2.6

## **2.13 Records**

Present in clause 2.21

## **2.14 Dissertation: As per Dissertations Regulations of KUHS**

Every candidate pursuing MDS degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The results of such a work shall be submitted in the form of a dissertation.



The dissertation is aimed to train a postgraduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results and drawing conclusions. Every candidate shall submit to the University in the prescribed format a synopsis containing particulars of proposed dissertation work after obtaining ethical clearance from the Institutional Ethical Committee **within six months from the date of commencement of the course or before the dates notified by the University**. The synopsis shall be sent only through the Principal of the institution. Such synopsis will be reviewed and the dissertation topic will be registered by the university. No change in the dissertation topic or guide/co-guide shall be made without prior approval of the University. The dissertation should not be just a repetition of a previously undertaken study but it should try to explore some new aspects. The dissertation should be written under the following headings:

- i. Introduction
- ii. Aims and Objectives of the study
- iii. Review of Literature
- iv. Methodology
- v. Results
- vi. Discussion
- vii. Conclusion
- viii. Summary
- ix. References
- x. Annexures

The written text of dissertation shall be not less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires, and other annexures. It should be neatly typed (font size 13-Times New Roman or font size 13-Cambria) in 1.5 line spacing on one side of the paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. (Refer Section V and VII). The guide, co-guide if any, Head of the Department and the Head of the Institution shall certify the dissertation.

For uniformity, it was suggested that the colour of the hard bind of the dissertation for all branches of MDS course in the purview of KUHS shall be dark brown with letters of gold colour. The title, author, and year of study should also be imprinted or embossed on the spine of the book. **Three hard copies and one properly labeled soft copy in a CD (refer Section VII) of the dissertation thus prepared shall be submitted to KUHS on the 29<sup>th</sup> month of commencement of the course / 31<sup>st</sup> Oct. of the 3<sup>rd</sup> academic year, whichever falls first.** Dissertation should preferably be sent to a minimum of three reviewers / examiners / assessors, of which two shall be from outside the state and one from the affiliated colleges of KUHS. Consent for acceptance for evaluation of dissertation should be obtained from the reviewer/examiner/assessor before the dissertation are despatched. Proforma for evaluation of dissertation should be sent along with the copies of the dissertation to the reviewers appointed by the university. The proforma should contain all the assessment criteria with the clause— **Accepted/Accepted with modifications/Rejected** and reasons for rejection by the examiner. This proforma should be sent back to the University within two weeks / within the date specified after receipt of dissertation. The dissertation may be declared accepted if more than 50% of the

reviewers (2 in the case of 3 reviewers) have accepted it. If modifications are to be made as specified, 3 hard copies and one soft copy of the dissertation after corrections made by the candidate should be submitted within 30 days to the University which may be sent back to the same examiner/s by the University for Acceptance after a fee has been levied from the candidate. If the dissertation has been rejected by more than 50% of the reviewers (2 in the case of 3 reviewers), the dissertation may be reviewed by an Expert Reviewing Committee comprising of not less than two subject experts, Dean (Research) of KUHS and Guide of the candidate provided the Guide requests for a review, after a fee has been levied from the candidate. If rejected by the Reviewing Committee, the candidate should take up a new topic and undergo all the procedures of submitting the synopsis, fees, IEC clearance, etc as prescribed by the University. The candidate who takes up the new topic can appear only for the subsequent examination.

**Approval of dissertation work is an essential precondition for a candidate to appear in the final University examination.** Hall tickets for the Part II examination should be issued to the candidate only if the dissertation has been accepted.

A candidate whose dissertation has been accepted by the examiners and approved by the University, but who is declared to have failed at the final examination will be permitted to reappear at the subsequent MDS examination without having to prepare a dissertation.

**Guide** – The academic qualification and teaching experience required for recognition by the University as a guide for dissertation work is as laid down by the Dental Council of India / KUHS.

**Co-guide** – A co-guide may be included provided the work requires substantial contribution from the same department or a sister department or from another institution recognized for teaching/training by KUHS/DCI. The co-guide should fulfill the academic qualification and teaching experience required for recognition by the University as a co-guide for dissertation work.

**Change of Guide** – In the event of a registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the University.

### **2.15 Speciality training if any**

Present in clause 2.6

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

Present in clause 2.6

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

Present in clause 2.6

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

#### **Applied Basic Sciences**

SUBJECT	NAME OF AUTHOR	NAME OF BOOK
Anatomy	BD Chaurasia	BD Chaurasia's Human Anatomy

	William, Peter L	Grays Anatomy
Oral Anatomy	Ash, Major M	Wheeler's Dental Anatomy, Physiology and Occlusion
	Sicher, Harry, Du Brull, Llyod	Oral Anatomy
Oral Histology	Bhaskar B.N. Ed	Orban's Oral Histology and Embryology Avery, James K
	Avery, James K	Essentials of Oral Histology and Embryology
Embryology	Sadler	Langman's Medical Embryology
	Inderbeer Singh	Human Embryology
Physiology	Guyton Arthur and John L Hall	Text Book of Medical Physiology
	Ganong, William F	Review of Medical Physiology
Pharmacology	KD Tripathi	Essentials of Medical Pharmacology
	Hardman, Joel G	Goodman and Gilman's pharmacological basis of Therapeutics
Nutrition	Nizel	Nutrition in Preventive Dentistry: Science and Practice
General Pathology	Cotran, Ramzi S and Others	Robbins Pathologic Basis of Disease
	Harsh Mohan	Textbook of Pathology
Oral Pathology	Shaffer, William and Others	Textbook of Oral Pathology
	Neville, Brad W and Others	Oral and Maxillofacial Pathology
Microbiology	Ananthanarayan and Panicker	Textbook of Microbiology
	Lakshman S	Essential Microbiology for Dentistry
Biostatistics	Dr. Symalan	Statistics in Medicine
	Soben Peter	Essentials of Preventive and Community Dentistry
	Sunder Rao and Richard J.	Introduction to Biostatistics and Research Methods

## Oral Pathology and Microbiology

### 1. Maxillofacial Pathology

- 1.1. Oral and maxillofacial pathology – 2<sup>nd</sup> edition: Neville, Bouquet, Damn
- 1.2. Oral medicine – 10<sup>th</sup> edition Burket
- 1.3. Basic pathology – 6<sup>th</sup> edition Kumar Cotran Robbins
- 1.4. Basic pathology – 4<sup>th</sup> edition Harshamohan
- 1.5. Oral pathology — 4<sup>th</sup> edition Regezi /Scuibba
- 1.6. Differential diagnosis of oral lesion — 4<sup>th</sup> edition Wood/Gauz
- 1.7. Cysts of oral region — 3<sup>rd</sup> edition Mervyn Shear
- 1.8. Oral pathology — 4<sup>th</sup> edition -Shafer

- 1.9. Oral diseases –Cawson, Binnie
- 1.10. Colour atlas of oral pathology – Wright Cawson, Odell
- 1.11. Syndromes of the head and neck – Gorlin
- 1.12. Colour atlas of oral pathology – Lee
- 1.13. Colour atlas of oral pathology – Eveson& Scully
- 1.14. Histopathology of Tumours - Enzinger& Weiss
- 1.15. Colour atlas of oral pathology – Ishikawa/Waldrome
- 1.16. Basic histopathology –Wheater
- 1.17. Ham’s histology
- 1.18. Surgical pathology of salivary glands – Ellis
- 1.19. Oxford textbook of pathology
- 1.20. Orofacial diseases – Scully – Porter
- 1.21. Histopathology of skin – Lever
- 1.22. Surgical pathology of mouth and jaws –Cawson /Eveson

## **2. Oral Microbiology**

- 2.1. Essential oral microbiology –2nd edition Samaranayake
- 2.2. Oral Microbiology — 3rd edition Marsh martin
- 2.3. Medical Microbiology – Murray/Rosenthal
- 2.4. Microbiology – Anathanarayanan

## **3. Immunology**

- 3.1. Basic Immunology - Ivan Roitt
- 3.2. Essential Immunology - Ivan Roitt

## **4. Oncology**

- 4.1. Pathology of tumours of the oral tissue –5<sup>th</sup> edition Lucas
- 4.2. Cancer – Principles and practice – de Vita
- 4.3. Cancer biology – Ruddon
- 4.4. Oral cancer – Neville / Johnson
- 4.5. Oxford textbook of oncology
- 4.6. Evans histological appearance of tumours

## **5. Staining**

- 5.1. Theory and practice of histological technique
- 5.2. Cellular pathology technique – Bancroft C.F. A. culling
- 5.3. Histopathologic technique – Lillie
- 5.4. Histological methods -Kiemann
- 5.5. Histological methods – Disbre/Rack

## **6. Oral Histology & Embryology**

- 6.1. Oral Histology — 5<sup>th</sup> edition Tencaate
- 6.2. Oral Histology – Orben
- 6.3. Oral histology – James Avery
- 6.4. Oral Histology – Inheritance and development – Vincent Provenza
- 6.5. Wheelers dental anatomy physiology and occlusion
- 6.6. Human embryology – Langman
- 6.7. Human embryology – Larsen

- 6.8. General Histology – Inderbirsingh
- 6.9. Gray's anatomy – 42th edition
- 6.10. Scientific foundations of Dentistry – Kramer/Irvin

## **7. Dermatology**

- 7.1. Rook's Textbook of Dermatology (Volume I – IV) Tony Burns
- 7.2. Lever's histopathology of the skin David E. Elder

## **2.19 Reference books**

As suggested by HOD

## **2.20 Journals**

1. Journal of Oral & Maxillofacial Pathology (JOMP)
2. Oral & Maxillofacial Pathology Journal (OMPJ)
3. Triple 'O' (journal of Oral pathology, Oral medicine, Oral surgery and Endodontics)
4. Journal of Oral Pathology and Medicine
5. Lancet Oncology
6. Oral Disease
7. Oral Oncology
8. Journal Of The National Comprehensive Cancer Network (JNCCN)
9. Head & Neck Oncology
10. Indian Journal of Cancer
11. Indian Journal of Pathology and Microbiology
12. Human Pathology
13. Indian Journal Of Dermatology, Venereology And Leprology
14. International Journal of Dermatology
15. American Journal of Dermatology
16. Histopathology
17. Histochemistry
18. Staining Technology
19. Journal of Oral Biosciences
20. Indian Journal of Orofacial Genetics
21. International Journal of Oral Medical Science
23. Journal of Dental Research
24. Cell

## **2.21 Logbook**

### **▫ Work Diary / Log Book**

Logbooks serve as a document of the trainee's work. The trainee shall maintain this Logbook of the special procedures/operations observed/assisted/performed by him/her during the training period right from the point of entry and its authenticity shall be assessed weekly by the concerned Post Graduate Teacher / Head of the Department. This shall be made available to the Board of Examiners for their perusal at the time of his / her appearing at the Final examination. The logbook should record clinical cases seen and presented, procedures and tests performed, seminars, journal club and other presentations. Logbook entries must be qualitative and not merely quantitative, focusing on learning points and recent advances

in the area and must include short review of recent literature relevant to the entry. A work diary containing all the various treatment done by the candidate in the course of the study should also be maintained.

The work diary shall be scrutinized and certified by both the guide/co guide and Head of the Department and presented in the University practical/clinical examination

### 3 EXAMINATIONS

#### Examinations

Evaluation is a continuous process, which is based upon criteria developed by the concerned authorities with certain objectives to assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the concerned MDS programme. Evaluation is achieved by two processes

- 1) Formative or internal assessment
- 2) Summative or university examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the institution. Summative evaluation is done by the university through examination conducted at the end of the specified course.

A candidate registered for MDS course must clear the final examination within six years of the date of admission. The examinations should be so organized that this shall be used as the mechanism to confirm that the candidate has acquired appropriate knowledge, skill and competence at the end of the training that he/she can act as a specialist and/or a medical teacher as per expectation. University examination will be held regularly by KUHS in April-May/October-November every year.

A candidate who wishes to study for MDS in a second specialty should have to take the full course of 3 years in that specialty and appear for examinations.

#### 3.1 Eligibility to appear for exams

Every candidate to become eligible to appear for the **MDS examination** shall fulfill the following requirements.

#### MDS Part I Examination

**Attendance:** Every candidate shall have fulfilled the attendance prescribed by the University(80%) during first academic year of the Postgraduate course.

#### Library Dissertation

Submission of the library dissertation as per the regulations of KUHS is mandatory for a candidate to appear for the university examination.

#### MDS Part II (Final) Examination

##### Attendance

Every candidate shall have fulfilled the attendance prescribed by the University during **each academic year** of the Postgraduate course. A candidate becomes eligible for writing the University examination only after the completion of 36 months from the date of commencement of the course. The candidates should have completed the training period before the commencement of examination.

## **Dissertation**

Approval of the dissertation is a mandatory requirement for a candidate to appear for the Part II University examination.

## **Pass in MDS Part I Examination**

Every candidate shall have to pass the Part I examination to become eligible to appear for the Part II examination. The candidates shall have to pass the Part-I examination at least six months prior to the Part-II examination.

## **Progress and Conduct**

Every candidate shall have participated in seminars, journal review meetings, symposia, conferences, case presentations, clinics and didactic lectures during each year as designed by the concerned department.

## **Work Diary and Logbook**

Every candidate shall maintain a work diary and logbook for recording his/her participation in the training programmes conducted by the department. The work diary and logbook shall be verified and certified by the Head of the department. The certification of satisfactory progress by the Head of the Department and Head of the Institution shall be based on checklist given in 5.1 to 5.8.

- **Students should note that in case they do not complete the exercises and work allotted to them within the period prescribed, their course requirements will be considered unfulfilled.**
- **Clinical Records, Work Diaries and Logbooks should be maintained regularly and approved by the guide, duly certified by the Head of the Department.**

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

The MDS Part I examination shall be held at the end of the first academic year and the MDS Part II examination at the end of the third academic year. The university shall conduct two examinations in a year at an interval of four to six months between two examinations. **Not more than two examinations shall be conducted in an academic year.**

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

The MDS examination shall consist of theory, practical / clinical examination, and Viva voce and Pedagogy

Theory: There shall be two theory examinations for the MDS course,

**Part I Examination** – at the end of the first academic year

**Part II Examination** – at the end of the third academic year

**Part-I Examination:** Shall consist of one theory paper

There shall be a theory examination in the Basic Sciences of three hours duration at the end of the first academic year of the course. The question papers shall be set and evaluated by the faculty of the concerned speciality. The candidates shall have to secure a minimum of 50% marks in the Basic Sciences paper and shall have to pass

the Part-I examination at least six months prior to the Part-II examination.

**Part-II Examination:** Shall consist of

(i) Theory - three papers, namely:—Paper I, Paper II & Paper III, each of three hours duration.

(ii) Practical and Clinical Examination;

(iv) Viva-voce and Pedagogy.

A candidate who wishes to study in a second speciality, shall have to undergo the full course of three years duration in that specialty.

**Theory : (Total 400 Marks)**

**(1) Part I University Examination (100 Marks):-**

There shall be 10 questions of 10 marks each (Total of 100 Marks)

**(2) Part II (3 papers, each of 100 Marks):-**

(i) Paper-I: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(ii) Paper-II: 2 long essay questions of 25 marks each and 5 short essays of 10 marks each. (Total of 100 Marks)

(iii) Paper III: 2 out of 3 essay questions (2 x 50 = 100 Marks)

**Practical Examination : 200 Marks**

**Viva voce : 100 Marks**

**Written Examination (Theory) : 400 Marks**

Theory:

There shall be two theory examinations for the MDS course.

Part-I: Basic Sciences Paper - 100 Marks

The Part I examination consists of one theory paper in Basic Sciences, of three hours duration and shall be conducted at the end of the first academic year of the MDS course.

Part II ( Final) Theory/Written examination:300 Marks

The Part II theory examination shall be conducted at the end of Third year of MDS course and consist of three papers, each of three hours duration. Each paper shall carry 100 marks. The type of questions in the first two papers will be two long essay questions carrying 25 marks each and five short essay questions each carrying ten marks. There will be no options in the questions in the first 2 papers. Third paper will be an essay question paper with three essay questions carrying 50 marks each and the candidate is to answer any two of the essays. Questions on recent advances may be asked in any or all the papers. The syllabus for the theory papers of the concerned specialty should cover the entire field of the subject. Though the topics assigned to the different papers are generally evaluated under designated papers, a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics. The theory examinations shall be held sufficiently earlier than the practical/clinical examinations to facilitate evaluation of the answer books.



The total marks for the Part II theory examination shall be 300.

**Practical Examination : 200 Marks**

In case of practical examination, it should aim at assessing competence and skills of techniques and procedures. It should also aim at testing student's ability to make relevant and valid observations, interpretation and inference of laboratory or experimental or clinical work relating to his/her subject for undertaking independent work as a specialist. The total mark for practical/clinical examinations shall be 200.

**Viva voce : 100 Marks**

Viva voce examination shall aim at assessing depth of knowledge, logical reasoning, confidence and oral communication skills. The candidate may be given a topic for the pedagogy in the beginning of the clinical examination and asked to make a presentation on the topic for 8-10 minutes. The total marks shall be 100 of which 80 would be for the viva voce (20 marks/examiner) and 20 marks for the pedagogy.

**3.4 Papers in each year**

**Part I Examination** – conducted at the end of the first academic year

**Paper-I : Applied Basic Sciences:**

Applied anatomy, Physiology (General and oral), Cell Biology, General Histology, Biochemistry, General Pathology, General and Systemic, Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (oral and Dental histology), Biostatistics and Research Methodology

**Part II Examination** – conducted at the end of the third academic year

**Paper-I** : Oral pathology, Oral Microbiology and Immunology and Forensic Odontology

**Paper-II** : Laboratory techniques and Diagnosis and Oral Oncology

**Paper-III** : Essay - Descriptive and analyzing type question

**3.5 Details of theory exams**

The MDS course shall have **two theory examinations**,

(i) **Part I Examination** – consisting of one paper on Applied Basic Sciences, of three hours duration, conducted at the end of the first academic year

(ii) **Part II Examination** – consisting of three papers, Paper I, Paper II, Paper III, each of three hours duration, conducted at the end of the third academic year.

**Part-I Examination:**

Paper I -Applied Basic Sciences: Applied Anatomy, Physiology, and Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics.

**Part II Examination :**

Paper I- Oral pathology, Oral Microbiology and Immunology and Forensic Odontology

Paper-II- : Laboratory techniques and Diagnosis and Oral Oncology

Paper-III –Essay- Descriptive and analysing type question

### **3.6 Model Question Papers MDS Part I Examination**

#### **MDS Oral and Maxillofacial Pathology and Oral Microbiology**

**Paper I**—Applied Basic Sciences: Applied anatomy, Physiology  
(General and oral), Cell Biology, General Histology,  
Biochemistry, General Pathology, General and Systemic  
Microbiology, Virology, Mycology, Basic Immunology,  
Oral Biology (oral and dental histology), Biostatistics and  
Research Methodology

**(Answer all questions)**

**Time: 3 hrs**

**MaxMarks: 100**

**Essays**

**(10 x 10 = 100 marks)**

1. Describe the muscles of the tongue including its blood supply, lymph drainage and nerve supply
2. Explain the physiological basis of pain. Add a note on referred pain.
3. Discuss the Theories on the evolutionary origin of teeth
4. Define inflammation. Discuss the cellular and vascular events in inflammation.
5. Describe the macroscopic and microscopic structure of submandibular salivary glands.
6. Professional ethics
7. Metabolism and role of Streptococcus mutans in dental caries
8. Retrospective research
9. Healing of extraction sockets.
10. Calcium homeostasis.

#### **MDS Part II Examination**

#### **MDS Oral and Maxillofacial Pathology and Oral Microbiology**

**PAPER-I:** Oral pathology, Oral Microbiology & Immunology and  
Forensic Odontology

**(Answer all questions)**

**Time: 3 hours**

**Max Marks: 100**

**Long Essays**

**(2x25=50 marks)**

1. Discuss in detail the vesiculobullous lesions of the oral cavity.
2. Discuss odontogenic tumors of mesenchymal origin

**Short Essays**

**(5x10=50 marks)**

3. Acid fast stain
4. Focal infection and focus of infection
5. Indirect immunohistochemistry

6. Oral candidiasis

7. Amelogenesis imperfecta

**MDS Part II Examination**

**MDS Oral and Maxillofacial Pathology and Oral Microbiology**

**PAPER-II: Laboratory techniques and Diagnosis and Oral Oncology**

**(Answer all questions)**

**Time: 3 hrs**

**Max marks : 100**

**Long Essays**

**(2x25=50 marks)**

1. Discuss the various grading systems of oral squamous cell carcinoma

2. Discuss the different types of hematoxylin and its uses

**Short Essays**

**(5x10=50 marks)**

3. Apoptosis.

4. Lab diagnosis of anemia

5. Confocal microscope

6. Oncogenes

7. Lectins

**MDS Part II Examination**

**MDS Oral and Maxillofacial Pathology and Oral Microbiology**

**PAPER-III: Essay (Answer any TWO questions)**

**Time: 3 hrs**

**Max Marks: 100**

1. Discuss the giant cell lesions of the oral cavity ( 50 marks)

2. Autoimmunity and autoimmune oral lesions ( 50 marks)

3. Advanced diagnostic techniques in oral cancer ( 50 marks)

**3.7 Internal assessment component**

Not applicable.

**3.8 Details of practical/clinical exams**

**Practical Examination – 2 Days – Total 200 marks**

**1. Case Presentation - (30 marks)**

One long case (20 marks)

One short case (10 marks)

Any Ulceroproliferative growth

Any white lesions

Any erythematous lesions

Skin lesion with oral manifestation

**2. Clinical Haematology - Any 2 investigations & discussion (20 marks)**

Hemoglobin Estimation

Bleeding time

Clotting time

Total Count (RBC and WBC),

Differential Count  
ESR

**3. Smear Presentation- (20 marks)**

Cytology or microbial smear and staining

Smear – Giemsa/PAP

Staining and its discussion

**4. Paraffin sectioning and H & E Staining – (30 Marks)**

Staining – H & E and / special staining

Reporting of the stained slide

Viva voce on Laboratory techniques

**5. Histopathology slide discussion -(100 marks)**

Histopathology Report Writing and

Discussion of 8 slides

**Viva Voce : 100 Marks**

i. Viva voce 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills on the subject.

ii. Pedagogy Exercise: 20 marks

A topic will be given at the beginning of the clinical examination and will have to be presented for 8-10 minutes.

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

**Part I:** The University shall appoint one internal and one external examiner of the same specialty for evaluating the Part I answer scripts. The Part I answer papers shall be evaluated by external and internal examiners of the same speciality appointed by the University adhering to the evaluators guidelines of KUHS.

**Part II:** There shall be at least four examiners in each branch of study. Out of four, two (50%) should be external examiners and two shall be internal examiners. The qualification and teaching experience for appointment as an examiner shall be as laid down by the DCI. The external examiners shall ordinarily be invited from another recognized University from outside the state. An external examiner may ordinarily be appointed for the same institute for not more than two years consecutively. Thereafter he may be reappointed after an interval of one year. The same set of examiners shall ordinarily be responsible for the practical and oral part of the examination.

The Head of the Department shall ordinarily be one of the examiners and the chairperson of the Board of Examinations; second internal examiner shall rotate after every two consecutive examinations if there are more than two postgraduate teachers in the department other than the Head of the department. No person who is not an active Postgraduate teacher in that subject can be appointed as Examiner. However in case of retired personnel, a teacher who satisfies the above conditions could be appointed as

examiner up to one year after retirement.

For the MDS examination, if there are no two qualified internal examiners in an institute the second internal examiner can be from a neighbouring DCI and KUHS approved / recognized Dental College having PG course in the specific speciality. This examiner should be an active PG teacher in the same speciality with the qualifications and experience recommended for a teacher for postgraduate degree programme. The examination can also be conducted by one qualified internal examiner and three qualified external examiners if there is no qualified second internal examiner.

Reciprocal arrangement of Examiners should be discouraged, in that, the internal examiner in a subject should not accept external examinership of a college from which the external examiner is appointed in his subject in the same academic year.

### **3.10 Details of viva**

#### **Viva Voce :100 Marks**

i. Viva-Voce examination :80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy =20 marks

### **4.INTERNSHIP Not applicable for PG courses**

### **5.ANNEXURES**

#### **5.1 Check Lists for Monitoring: Log Book, Seminar Assessment etc.**

## 5.1 Checklist 1

### Model Checklist for Evaluation of Preclinical Exercises

Name of Student:

Date:

Name of the Faculty:

Sl. No:	Items for observation during evaluation	Score
1	Quality of Exercise	
2	Ability to answer questions	
3	Punctuality in submission of exercise	
4	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty

## 5.2 :Checklist 2

### Model Checklist for Evaluation of Journal Review / Seminar Presentation

Name of Student:

Date:

Name of the Faculty:

Name of Journal / Seminar:

Sl. No:	Items for observation during evaluation	Score
1	Relevance of Topic	
2	Appropriate Cross references	
3	Completeness of Preparation	
4	Ability to respond to questions	
5	Effectiveness of Audio-visual aids used	
6	Time Scheduling	
7	Clarity of Presentation	
8	Overall performance	
	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty

### 5.3 :Checklist 3

#### Model Checklist for Evaluation of Clinical Case and Clinical Work

Name of Student:

Date:

Name of the Faculty:

Sl. No:	Items for observation during evaluation	Score
1	History	
	Elicitation	
	Completeness	
2	Examination	
	General Examination	
	Extraoral examination	
	Intraoral examination	
3	Provisional Diagnosis	
4	Investigation	
	Complete and Relevant	
	Interpretation	
5	Diagnosis	
	Ability to defend diagnosis	
6	Differential Diagnosis	
	Ability to justify differential diagnosis	
7	Treatment Plan	
	Accuracy	
	Priority order	
8	Management	
9	Overall Observation	
	Chair side manners	
	Rapport with patient	
	Maintenance of Case Record	
	Quality of Clinical Work	
	Presentation of Completed Case	
10	TOTAL SCORE	

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3



Very good	4
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Signature of Faculty

### 5.4 :Checklist 4

### Model Checklist for Evaluation of Library Dissertation Work

Sl. No:	Items for observation during evaluation	Score
1	Interest shown in selecting topic	
2	Relevance of Topic	
3	Preparation of Proforma	
4	Appropriate review	
5	Appropriate Cross references	
6	Periodic consultation with guide	
7	Completeness of Preparation	
8	Ability to respond to questions	
9	Quality of final output	
TOTAL SCORE		

Name of Student:

Date:

Name of the Faculty/Guide:

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty

## 5.5 :Checklist 5

### Model Checklist for Evaluation of Dissertation Work

Sl. No:	Items for observation during evaluation	Score
1	Interest shown in selecting topic	
2	Relevance of Topic	
3	Preparation of Proforma	
4	Appropriate review	
5	Appropriate Cross references	
6	Periodic consultation with guide/co-guide	
7	Depth of analysis/Discuss	
8	Ability to respond to questions	
9	Department Presentation of findings	
10	Quality of final output	
	TOTAL SCORE	

Name of Student:

Date:

Name of the  
Faculty/Guide/Co-guide:

Performance	Score
Poor	0
Below Average	1
Average	2
Good	3
Very good	4

Signature of Faculty

## 5.6 :CHECKLIST- 6

### CONTINUOUSEVALUATION OF DISSERTATION WORK BY GUIDE/CO-GUIDE

Sl.No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1	Periodic consultation with guide / co- guide					
2	Regular collection of case material					
3	Depth of Analysis / Discussion					
4	Department presentation of findings					
5	Quality of final output					
6	Others					
	TOTAL SCORE					

Name of the Trainee:

Date

Name of the Faculty

Signature of the guide / co-guide

Check List No	PARTICULARS	Name of trainee		
		First Year	Second Year	Third Year
1	Preclinical Exercises			
2	Journal Review Presentation			
3	Seminars			
4	Library dissertation			
5	Clinical work			
6	Clinical presentation			
7	Teaching skill practice			
8	Dissertation			
	TOTAL			

### 5.7 : CHECKLIST - 7

#### OVERALL ASSESSMENT SHEET

Name of the College:

Date:

Name of Department:

**Signature of HOD**

**Signature of Principal**

The above overall assessment sheet used along with the logbook should form the basis for certifying satisfactory completion of course of study, in addition to the attendance requirement.

**Key:**

**Mean score:** Is the sum of all the scores of checklists 1 to 6

5.8 : LOG BOOK

**DEPARTMENT OF .....**

**MDS Programme**

**LOG BOOK OF**

**NAME.....**

**BIODATA OF THE CANDIDATE**

**EXPERIENCE BEFORE JOINING P.G. COURSE**

**DETAILS OF POSTING :**

- **FIRST YEAR**
- **SECOND YEAR**
- **THIRD YEAR**

**DETAILS OF LEAVE AVAILED**

**PRECLINICAL EXERCISES**

**LIBRARY DISSERTATION**

**RESEARCH WORK**

**PARTICIPATION IN CONFERENCES – CDE PROGRAMMES**

**DETAILS OF PARTICIPATION IN ACADEMIC PROGRAMME**

**SEMINARS /SYMPOSIA PRESENTED**

**JOURNAL CLUBS**

**TEACHING ASSIGNMENTS – UNDERGRADUATES / PARAMEDICAL.**

**SPECIAL DUTIES (IF ANY)**

**INTERNAL ASSESSMENT**

**DAILY ACTIVITIES RECORD (BLANK PAGES)**

**ONE PAGE FOR EACH MONTH X 36 PAGES**

**MISCELLANEOUS**

**SUMMARY**

Date	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching	Particulars

5.8.1 :LOG BOOK-1

**ACADEMIC ACTIVITIES ATTENDED**

Name:

Admission Year:

College:


Signature of the guide / co-guide

5.8.2 :LOG BOOK - 2

**ACADEMIC PRESENTATIONS MADE BY THE TRAINEE**

Name :

Admission Year:

College:

Date	Topic	Type of activity - Specify Seminar, Journal club, Presentation, UG teaching


Signature of the guide / co-guide

5.8.3 :LOG BOOK - 3

**DIAGNOSTIC AND OPERATIVE PROCEDURES PERFORMED**

Name

Admission Year:

College:

Date	Name	OP No.	Procedure	Category O, A, PA, PI




**Key:**

O- WASHED UP AND OBSERVED - INITIAL 6 MONTHS OF ADMISSION

A - ASSISTED A MORE SENIOR SURGEON -1 YEAR MDS

PA - PERFORMED PROCEDURE UNDER THE DIRECT SUPERVISION OF A SENIOR SURGEON - II YEAR MDS

PI - PERFORMED INDEPENDENTLY - III YEAR MDS

Signature of the guide / co-guide

**Annexure : 5.9**

**Faculty**

a. In each department there should be a minimum required full time faculty members belonging to the disciplines concerned with requisite postgraduate qualification and experience for being a PG teacher as prescribed by the DCI. The requirements of the faculty should follow the norms framed by the DCI.

b. To strengthen and maintain the standards of postgraduate training, DCI and KUHS recommends the following minimum faculty requirements (Table 1) for starting and continuation of postgraduate training programmes. Any increase of admissions will also be based on the same pattern.

**Table 1: Minimum Faculty Requirements**

**Unit 1**

1. Minimum faculty requirement of 1<sup>st</sup> Unit in an undergraduate institute having basic infrastructure of 50 admissions

		Readers/	
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Department / Speciality	Professor (HOD)	Associate Professors	Lecturers/Assistant Professor
Prosthodontics and Crown & Bridge	1	3	4
Conservative Dentistry and Endodontics	1	3	4
Periodontology	1	2	2
Orthodontics & Dentofacial Orthopedics	1	2	2
Oral & Maxillofacial Surgery	1	2	2
Oral & Maxillofacial Pathology and Oral Microbiology	1	2	2
Oral Medicine & Radiology	1	2	2
Pediatric Dentistry	1	2	2
Public Health Dentistry	1	2	2

2. Minimum faculty requirement of 1<sup>st</sup> Unit in an undergraduate institute having basic infrastructure of 100 admissions

Department / Speciality	Professor (HOD)	Readers/ Associate Professors	Lecturers/Assistant Professor
Prosthodontics and Crown & Bridge	1	3	6
Conservative Dentistry and Endodontics	1	3	6
Periodontology	1	3	3
Orthodontics & Dentofacial Orthopedics	1	2	3
Oral & Maxillofacial Surgery	1	3	3
Oral & Maxillofacial Pathology and Oral Microbiology	1	2	3
Oral Medicine & Radiology	1	2	3
Pediatric Dentistry	1	2	3
Public Health Dentistry	1	2	3

### 3. Unit 2 :-

Each department shall have the following additional teaching faculty, over and above the requirement of Unit 1.

Professor	1
Reader /Associate Professor	1
Lecturer / Assistant Professor	2

- In addition to the faculty staff mentioned above there should be adequate strength of Senior Lecturers/ Lecturers available in the department. The department should also have adequate number of technical and other paramedical staff as prescribed by the Dental Council of India.
- A department which does not have a Professor and an Assistant Professor with requisite qualifications and experience as laid down by the DCI, shall not start a postgraduate course in that specialty.
- Faculty who is accepted as Postgraduate teacher in a dental institute starting MDS course will not be accepted for the next one year in any other dental institute.

**Clinical / Laboratory Facilities and Equipments**

There should be adequate clinical material, space and sufficient number of dental chairs and units, adequate laboratory facilities and should regularly be updated keeping in view the advancement of knowledge and technology and research requirements. The department should have the minimum number of all equipments including the latest ones necessary for the training and as recommended by the DCI/KUHS for each specialty from time to time.