

KERALA UNIVERSITY OF HEALTH SCIENCES

THRISSUR – 680 596, KERALA



REGULATIONS, CURRICULUM, AND SYLLABUS OF BACHELOR OF AUDIOLOGY & SPEECH LANGUAGE PATHOLOGY(BASLP)

(With effect from 2012-13 admission onwards)

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1. INTRODUCTION

1.1 Preamble

The regulation of the Bachelor of Audiology & Speech Language Pathology (BASLP) being conducted by the Kerala University of Health Sciences is in accordance with the recommendations of the respective council with an emphasis on the health needs of the Kerala State.

1.2 Title of the course

It shall be – BACHELOR OF AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY – Abbreviated as BASLP

1.2.1 Branches of Study

Audiology and Speech-Language Pathology

1.2.2 Definition of various Specialities

Audiology- Is defined as the science of hearing and balancing, art of its assessment and the habilitation and rehabilitation of individuals with hearing and balancing disorders.

Speech Language Pathology- Is defined as the branch of science which deals with Speech, language, deglutition and its disorders.

2.AIMS AND OBJECTIVES OF COURSES

2.1 Goals of the course

BASLP curriculum is oriented towards training students to undertake the responsibilities of an Audiologist and Speech- Language Pathologist.

2.1.1 This course enables the students to acquire professional knowledge in prevention, identification, assessment, habilitation and rehabilitation of speech, language, hearing, balancing and swallowing aspects.

2.1.2 Adequate emphasis is to be placed on cultivating logical and scientific habits of thoughts, clarity of expression, independence of judgment and ability to collect and analyze information and to correlate them.

2.1.3 The educational process should be placed in historical background as an evolving process and not merely as an acquisition of large number of disjointed facts without a proper perspective. The history of the field with reference to its evolution both in this country and rest of the world should form a part of this process.

2.1.4 Lectures alone are generally not adequate as a method of training and are a poor means of transferring / acquiring information and even less effective at skill development and in generating the appropriate attitudes. Every effort should be made to encourage the use of active methods related to demonstrations and on firsthand experience. Students will be encouraged to learn in small groups through peer interactions, so as to gain maximal experience through contacts with patients and the communities in which they live. While the curriculum objectives often refer to areas of knowledge or science, they are best taught in a setting of clinical relevance and hands on experience for students who assimilate and make this knowledge a part of their own working skills.

2.1.5 Clinics should be organized in small groups so that a teacher can give personal attention to each student with a view to improve his skill and competence in handling the patient.

2.1.6 Proper records of the work should be maintained which will form the basis of the student's internal assessment for practicals and should be available for the inspectors at the time of inspection of the college by the Rehabilitation Council of India (RCI).

3. REGULATIONS

3.1 Academic eligibility for admission

The candidate applying for admission to BASLP course

3.1.1 should have obtained a minimum of 50% (40% in case of SC/ST candidates) in 10+2 examination or equivalent examination conducted by the Pre University Board of Education of Government of respective State, and further

3.1.2 Should have studied: Physics, Chemistry & Biology / Mathematics/ Computer Science/ Statistics/ Electronics / Psychology

3.1.3 At the time of entry / admission to the first year of BASLP course the candidate should be of age 17 years or above.

The selection of students for the BASLP course shall be made based strictly on merit as decided by the competent authority approved by the Government of Kerala/Kerala University of Health Sciences and as per guidelines of the respective council.

3.2 Registration

A candidate on admission to the BASLP course shall apply to the University for Registration

By making a formal application in the prescribed format.

Original marklists of qualifying examination.

Transfer certificate from the previous institution.

Allotment letter from the competent authority who conducted the admission process.
Equivalency and migration certificate wherever needed.
Original SSLC/equivalent certificate.
The fees prescribed for the registration.

3.3 Duration of the course

3.3.1 The course shall be of 4 academic years including 1 academic year (10 months) of internship.

3.4 Medium of instruction and examination

Medium of instruction shall be English

3.5 Examination

3.5.1 Eligibility for appearing for the University examination

a. Attendance, conduct and condonation option:

4.4 Attendance

Minimum 80% of attendance separately in clinics/practicals and theory is the criteria for appearing for university examination. Condonation for 10% in the attendance once in the entire course period can be granted by the Head of the Institution.

b. Internal Assessment

Theory: It shall be based on periodical assessment, evaluation of student assignment, class presentation etc. Regular examination should be conducted throughout the course. Weightage for internal assessment shall be 20% of the total marks in each subject. There shall be 2 examinations and average will be taken as 50% of the internal assessment. The remaining 50% of the internal assessment will be based on day to day assessment.

Clinical Practicum: The internal assessment for clinical practicum shall be made by the faculty of concerned departments based on the clinical skills in assessment remediation, clinical case presentation and clinical viva. The weightage of internal assessment for clinical practicum shall be 50 % of the total marks.

The candidate must secure a minimum of 50% marks for internal assessment in a particular subject in order to be eligible to appear in the university examination of the subject.

The class average of internal assessment marks in each subject should not exceed 75%, both in theory and clinical practicum.

3.5.2 Scheme and schedule of examination

a. Scheme of Examination

Theory Examination: There shall be a university examination at the end of each academic year. Duration of each theory paper shall be for 3hours.

Clinical Practicum Examination: There shall be a Clinical Practicum Examination separately for Speech Language Pathology and Audiology which will be conducted by an internal and external examiner for 50 marks.

b. Schedule of Examination

Regular university examinations will be conducted in the month of May/ June and supplementary examinations in the month of November/ December as per the University schedule. No supplementary clinical practicumexamination will be conducted.

3.5.3 Question paper setting / pattern

Maximum mark for each theory paper shall be 80.

Every theory paper shall comprise of five questions carrying 16 marks with internal divisions of 8 +8, 10 + 6 etc.

The candidate should answer all the questions.

Question paper setters shall be appointed from inside and/or outside the State

Scrutiny of Question papers shall be done by the subject experts in respective faculties.

3.5.4 Scheme of valuation

The valuation will be conducted as per KUHS rules and regulations.

3.6 Criteria for pass and grace marks

3.6.1 Criteria for pass

For each theory subject a candidate must obtain a separate 50% mark for university examination and 50% for internal assessment

For each clinical practicum a candidate must obtain a separate 50% mark for university examination and 50% for internal assessment

3.6.2 Grace marks

A maximum of 5 marks or as per University regulations may be given as grace mark either in a subject alone or distribute it among subjects so as to make the candidate eligible for a pass. No grace mark will be given for clinical practicum examination.

3.7 Declaration of class

Successful candidates who obtain 75% and above marks are eligible for Distinction, 60% and above for First class and candidate who obtain 50% and above marks shall be declared to have passed the examination in Second class. Candidates who fail in first attempt in any subjects and pass subsequently shall not be ranked in distinction or first class.

3.8 Criteria for promotion

Before the commencement of internship the candidate should have passed in all the subjects candidate should pass all subjects of 1st and 2nd year for appearing University Examination of 3rd year.

A candidate failing in 1st year theory paper is allowed to carry over to 2nd year.

However candidate failing in either of the two clinical practicum examinations shall not be eligible for admission for next academic year. Such candidates should repeat the failed clinical practicum of the previous academic year.

3.9 Rules for Supplementary batch / Additional batch

No supplementary batch / additional batch will be allowed.

3.10 Qualification of Teacher / Examiner

Teacher: Post Graduation with 2 years of teaching/research/ clinical experience in the respective speciality.

Examiner: 2 years of teaching experience in the respective speciality after completion of Post-Graduation.

Examiner for Clinical Practicum: 2 years of teaching experience after MASLP / equivalent

3.11 Internship

3.11.1 Duration: The duration of internship will be for one academic year (10 months).

3.11.2 Eligibility: Students will be eligible to do internship only after passing all the theory papers and clinical practicum.

3.11.3 During the internship year the candidates should do 5 months of internship in an external institute (approved by KUHS) and the remaining 5 months in the parent institute.

3.11.4 The student has to obtain internship completion certificate from the parent institute to apply for a degree certificate.

3.11.5 Maintenance of records by students: Every student should maintain records of the number of hours of clinical work in different areas and institutions. This should be certified by the head of the institution or his/her nominee where the student is undergoing internship. The students should get the appraisal form duly filled by the supervisors in the respective institutions where they are undergoing internship and should be submitted to the parent institution in order to obtain internship completion certificate from the parent institutes. (See annexure)

3.11.6 No leaves will be permitted during the internship.

3.11.7 Extension of internship: Internship shall be extended by the number of days the student remains absent unauthorized. These extended days of internship should be completed in the respective external/internal institution.

3.11.8 Stipend: As per the norms of the parent Institute.

3.12 Migration and Transfer

Migration and Transfer to other institutions within the University will not be allowed during the course of study / Internship.

3.13 Break of course – rules of Re-admission

If a candidate is not appearing in the College for more than six months, he / she, on the recommendation of the Head of the Institution should get permission from the University for re-joining. Re-admission will be considered strictly as per the KUHS regulation.

3.14 Period of completion of the course

The maximum permitted period of completion of the course will be twice the duration of the course. However each paper should be successfully completed within three attempts including the first one.

3.15 Eligibility of award of Degree

Each student is eligible to apply for award of BASLP degree if he/ she clears all the papers (Theory and clinical practicum of the 3 academic years) and successful completion of 10 months of internship program. No candidate will be awarded the degree before completion of Internship.

4. COURSE CONTENT

4.1 SYLLABUS AND SCHEME OF EXAMINATION

A) Scheme of curriculum for first year

CODES/PAPER NO.	PAPER TITLE	TEACHING HOURS (MINIMUM)	EXAM DURATION	EXAM MARKS	IA MARKS	TOTAL MARKS
OA 010	Introduction to Speech Language Pathology and Speech Diagnostics and Therapeutics	75	3	80	20	100
OA 020	Introduction to Audiology and Audiological Evaluation.	75	3	80	20	100
OA 030	A) Anatomy B) Physiology C) Pathology Of Speech and Hearing System	75	3	30 30 20 — 80	7 7 6 — 20	100
OA 040	Biomedical Instrumentation and Acoustics	75	3	80	20	100
OA 050	Linguistics, Phonetics and Language Sciences	75	3	80	20	100
OA 060	Psychology related to Speech and Hearing	75	3	80	20	100
OA 070	A) Genetics B) Neurology C) Paediatrics	75	3	30 30 20 — 80	7 7 6 — 20	100
OA 080	Clinical Practicum-	300		50	50	100

	Speech Language Pathology					
OA 090	Clinical Practicum-Audiology	300		50	50	100
Total Marks						900

B) Scheme of curriculum for second year

CODES/PAPER NO.	PAPER TITLE	TEACHING HOURS (MINIMUM)	EXAM DURATION	EXAM MARKS	IA MARKS	TOTAL MARKS
OA 010	Normal and abnormal aspects of articulation	75	3	80	20	100
OA 020	Fluency and Its Disorders	75	3	80	20	100
OA 030	Normal and abnormal aspects of voice	75	3	80	20	100
OA 040	Diagnostic Audiology	75	3	80	20	100
OA 050	Part A: Educational Audiology and Rehabilitative Audiology	75	3	80	20	100
OA 060	Otolaryngology	75	3	80	20	100
OA 070	Statistics and Research Methods & epidemiology in speech and hearing	75	3	80	20	100
OA 080	Clinical Practicum-Speech Language	300		50	50	100

	Pathology					
OA 090	Clinical Practicum- Audiology	300		50	50	100
Total Marks						900

C) Scheme of curriculum for third year

CODES/PAPER NO.	PAPER TITLE	TEACHING HOURS (MINIMUM)	EXAM DURATION	EXAM MARKS	IA MARKS	TOTAL MARKS
OA 010	Motor Speech Disorders and Dysphagia	75	3	80	20	100
OA 020	Child Language Disorders	75	3	80	20	100
OA 030	Aphasia and other Language Disorders	75	3	80	20	100
OA 040	Hearing Aids	75	3	80	20	100
OA 050	Paediatric Audiology	75	3	80	20	100
OA 060	Environmental Audiology	75	3	80	20	100
OA 070	Part A:Scientific Enquiry in Speech and Hearing Part B: Organization and Administration of Speech and Hearing Centres	75	3	80	20	100
OA 080	Clinical Practicum- Speech	300		50	50	100

	Language Pathology					
OA 090	Clinical Practicum-Audiology	300		50	50	100
Total Marks						900

1st Year BASLP

OA 010: INTRODUCTION TO SPEECH AND LANGUAGE PATHOLOGY & SPEECH DIAGNOSTICS AND THERAPEUTICS

PART: A. INTRODUCTION TO SPEECH AND LANGUAGE PATHOLOGY

A. Introduction to Speech and Language

Unit1: Basic Concepts in speech, language and communication (5hours)

- a. Definitions of communication, speech, language and their components.
- b. Distinctions and similarities between them.
- c. Basic models, levels, modes and functions of speech communication
- d. Speech as an overlaid function, Speech chain.

Unit 2: Bases of speech (15 hours)

- a. Physical-Generation and propagation of sound, absorption and reflection of sound, free and forced vibrations, resonance, frequency response, sound pressure and intensity, spectrum. Speech mechanism as sound generator, vocal tract, periodic and aperiodic sounds, acoustic analysis and acoustic features of speech sounds, aerodynamics of speech production.
- b. Physiological - Physiology of respiratory, phonatory, resonatory and articulatory systems

- c. Social, psychological and linguistic basis of speech.
- d. Neurobiological and cognitive basis of speech and language

Unit 3: Normal developmental aspects (5hours)

- a. Normal development of speech and language
- b. Development of articulation
- c. Development of voice.
- d. Development of fluency and prosody

B. Introduction to speech and language pathology

Unit 4: Basic concepts (2hours)

- a. Definition
- b. Incidence and prevalence
- c. Causes of speech and language disorders

Unit 5: Speech, language and behavioral characteristics of

a. Voice disorders. (5hours)

- Disorders of pitch, loudness, quality
- alaryngeal voice
- dysarthrophonia
- Cleft palate

b. Phonological disorders-misarticulation, apraxia in children and adults, dysarthria in children and adults. **(2hours)**

c. Fluency disorders -stuttering, cluttering, neurogenic stuttering **(2hours)**

d. Language disorders-aphasia in children and adults, cerebral palsy, mutism, pervasive developmental disorders, dyslexia, dysgraphia, agnosia, specific language impairment, mental retardation and hearing impairment.**(4hours)**

PART: B. SPEECH DIAGNOSTICS AND THERAPEUTICS

A. Speech diagnostics

Unit 1 (5hours)

- a. Basic terminologies and concepts
 - Introduction to diagnostics

- Terminologies in the diagnostic process
- General principles of diagnosis
- Diagnostic setup and tools

Unit 2: (10 hours)

a. Diagnostic approaches and methods.

- Approaches to diagnosis-case History, need for the case history, essential factors to be included in the case history form, comparison of adults VS children case history, usefulness of the case history
- Interview -principles and techniques
- Self-reports, questionnaire, observations
- Diagnostic models -SLPM, Wepman, Bloom and Lahey
- Types of diagnoses -Clinical diagnosis, direct diagnosis, differential diagnosis. diagnosis by treatment, diagnosis by exclusion, team diagnosis, instrumental diagnosis, provocative diagnosis, tentative diagnosis; advantage/disadvantages
- Characteristics of a diagnostic clinician.

B. Speech therapeutics

Unit 3: (10hours)

a. Basic concepts of therapeutics

- Terminologies in speech therapeutics
- General principles of speech and language therapy
- Speech therapy set-up
- Individual and group therapy
- Integrated education

Unit 4 (5hours)

a. Procedures for speech-language therapy.

- Approaches to speech and language therapy -formal, informal and eclectic approaches
- Types of speech and language therapy
- Planning for speech and language therapy –goals, Steps, procedures, activities
- Techniques for
 - Speech and language therapy for various disorders of speech and language
 - Importance of reinforcement principles and strategies in speech and language therapy, types and schedules of rewards and punishment.

Unit 5 (5hours)

a. Clinical documentation and professional codes

- Documentation of diagnostic, clinical and referral reports
- Introduction to parent counseling, facilitation of parent participation and transfer of skills, follow-up
- Evaluation of therapy outcome
- Ethics in diagnosis and speech language therapy
- Self-assessment and characteristics of a clinician.

**OA 020: INTRODUCTION TO AUDIOLOGY & AUDIOLOGICAL EVALUATION
PART: A. INTRODUCTION TO AUDIOLOGY****Unit 1: (5hours)**

- a. Audiology -Historical aspects
- b. Case history -Need for the case history, essential factors to be included in the case history form, comparison of adults vs. children case history, usefulness of the case history

Unit 2 (10hours)

- a. dB concept -Different aspects of the dB -power and pressure formulae, zero dB reference for pressure and power, calculation of actual SPL, reference and dB values with any two given values calculation of overall dB when two signals are superimposed, hearing level, sensation level ,application of dB
- b. Threshold concept, threshold of audibility, MAP and MAF, threshold of pain, MCL, UCL, dynamic range, application.

Unit 3 (8hours)

- a. Frequency and intensity: - octave frequency concept, their psychological correlates, relationship between pitch and frequency and pitch and intensity, differential sensitivity, differential threshold, JND, DL for frequency and intensity.
- b. Phons and sones -relation between phons and sones, use of phone and sone graph, computation of relative loudness of two given sounds using these graphs.

Unit4 (8hours)

- a. Classification of hearing loss
- b. Causes of hearing impairment
- c. General characteristics of conductive, mixed and sensorineural hearing loss, hereditary deafness, congenital deafness, acquired hearing loss in children and adults, central auditory disorders.

Unit 5 (5hours)

- a. Tuning fork test -Rinne, Schwabach, Weber and Bing, interpretation, advantages, disadvantages, audiometric version of Weber and Bing test.

PART: B.AUDIOLOGICAL EVALUATION**Unit 1:****Puretone audiometer (8hours)**

- a. Historical developments, rationale behind puretone audiometry, classification of audiometers, parts of an audiometer, audiogram, symbols used, interpretation of audiogram, usefulness of audiogram, factors that affect AC threshold
- b. Bone conduction -historical developments, different types of BC vibrators, factors affecting BC thresholds including vibrator placement, size of vibrator, force of application, occlusion effect, central masking ,problems in bone conduction testing
Rainville and SAL tests-methods of obtaining pure tone thresholds, noise levels permissible in audiometric rooms
- c. Indian and international standards.

Unit 2 (6hours)

- a. Calibration of audiometers:- subjective calibration, real ear methods for AC and BC calibration electro-acoustic calibration of the output intensity through the headphones, insert receiver and bone vibrators, frequency calibration. Calibration of speech stimulus.Indian and International standards.

Unit 3 (5hours)

- a. Transducer -NBS 9A -performance of different types of earphones -WF 70S, TDH-39, TDH-49, TDG-50, ER-3A,ear cushions. Artificial ear, artificial mastoid .Indian and international standards.

Unit 4 (10hours)

- a. Definition, clinical use of masking for AC and BC. Different types of noise employed as maskers. Interaural attenuation, factors that affect interaural attenuation, when to mask, how much to mask, procedures for masking,factors to be considered in adequate masking. An alternative approach for AC masking fusion -inferred threshold.

Unit 5 (10hours)

a. Speech audiometry:-historical developments, different types of stimuli used for speech audiometry, speech detection threshold ,speech recognition threshold , SRT and PT A correlation , SRT and PT A disagreements , speech Identification score. Factors that affect scores in speech audiometry, live vs. write down response, electroacoustic system, signal-to-noise ratio, type of stimuli, half vs. full list, appropriateness of stimuli used in masking in speech audiometry. Procedure for obtaining SRT and SIS.BC speech audiometry -speech materials available in Indian languages.

UCL, MCL, Dynamic range,clinical applications ,PIPB function.

OA 030: ANATOMY, PHYSIOLOGY AND PATHOLOGY OF SPEECH AND HEARING SYSTEMS**A. Anatomy and Physiology of speech and auditory systems****Unit 1: (5hours)**

- a. Preliminaries -The anatomical position, general anatomical terms, directions and locations, body planes, pairings, naming
- b. Elementary tissues -epithelial tissues, connective tissues, special connective tissues, muscle tissue, nervous tissue, vascular tissue.

Unit 2: (8hours)

- a. Embryology of the speech mechanism, embryology of external, middle, inner ear
- b. Anatomy and physiology of the respiratory, phonatory, articulatory systems.

Unit 3: (2hours)

- a. Blood supply for the speech mechanism
- b. Blood supply for the hearing mechanism

Unit 4: (20hours)

- a. External ear - anatomy and physiology of the pinna, external auditory canal
- b. Middle ear -anatomy of the tympanic membrane, ossicular chain, Eustachian tube, walls of the tympanic cavity, muscles, ligaments and tendons.Physiology-transformer action of the middle ear, Function of the middle ear muscles and Eustachian tube.
- c. Inner ear: - Anatomy -parts of the inner ear, bony labyrinth and membranous labyrinth, cochlea, Semicircular canals, utricles, saccule, innervation to the cochlea.
Physiology of the cochlea, cochlear microphonics, summing potential, theories of hearing in brief, modes of bone conduction, physiology of the SSC, utricle and saccule.

Unit 5 (10hours)

a. Auditory pathway and central hearing mechanism: Anatomy of the afferent and efferent auditory pathway, action potential

B. Pathology of speech and hearing systems**Unit 1 (4hours)**

a. Introduction to pathology, cell injury and cellular adaptations. The normal cell, etiology of cell injury, pathogenesis of cell injury, pigments, atrophy, hypertrophy, cellular aging.

Unit 2 (4hours)

a. Immune pathology, inflammation and healing, components of immune system, diseases of immunity; inflammation, chemical mediators of inflammation, morphology of inflammation, regeneration, factors influencing healing.

Unit 3 (10hours)

- a. Infections and parasitic diseases with reference to speech and hearing systems
- b. Environmental and nutritional diseases
- c. Genetic diseases with reference to speech and hearing diseases caused by bacteria, fungi and viruses, neoplasia, environmental pollution, chemical and drug injury, essential nutrients, disorders of vitamins, diet and cancer, mendelian disorders

Unit 4 (6hours)

a. Pathologies of the laryngeal, articulatory and phonatory systems, inflammatory conditions, tumours, developmental anomalies, carcinoma.

Unit 5 (6hours)

a. Pathologies of the auditory systems -inflammatory lesions of the ear, tumors.

OA 040: BIOMEDICAL INSTRUMENTATION AND ACOUSTICS**A. Introduction to electronic devices****Unit 1: (10 hours)**

- a. Basic principle of operation and working of
- Resistors, potentiometers, capacitors, inductors and transformers
 - Semiconductor diodes and transistors
 - LEOs seven segment displays, LCOs
 - FETs, UJT

b. Introduction to linear and digital integrated circuits

c. DC power supply.

- Block diagram of a DC power supply, description and working of each block
- Linear regulated power supplies, line regulation and load regulation, specifications of a DC power supply unit
- SMPS

d. AC power supply

- AC voltage stabilizers -manual, automatic and servo controlled
- UPS, CT and inverters

e. Signal characteristics

B. Fundamentals of acoustics

Unit 2 (20 hours)

a. Physics of sound

- Nature and propagation of sound
- Sound characteristics such as frequency, pitch, amplitude, intensity
- Wavelength and loudness -sone, phons etc
- Sound pressure level, sound power level.

b. Quality and properties of sound

- Frequency response and its control, harmonic structure
- Reflection and absorption, acoustic impedance, reverberation, artificial reverberation

c. Acoustic treatment

- Choosing the right acoustic
- Absorption coefficient, Sabine's formula

d. Sound treatment, reproduction and recording

- Microphones -carbon, piezoelectric, moving coil, condenser etc
- Loudspeaker and their enclosures.
- Magnetic tape recording and reproduction, optical disc recording and reproduction
- Sound level meters

C. Introduction to computers and digital electronics

Unit 3 (15 hours)

a. Fundamentals of digital electronics

- OJ Binary number system, Hex code, bit, byte, etc,
- Logic gates, counters, flip-flops etc.

b. Introduction to computers

- Block diagram of a computer
- Hardware, software, memory devices and other peripherals
- Specifications of a personal computer
- Care and preventive maintenance of computes and peripherals.

D. Instrumentation for speech and hearing.**Unit 4 (15 hours)**

- a. Introduction to electronic instrumentation
 - Transducers and electrodes
 - Filters and pre-amplifiers
 - Power amplifiers and oscillators etc.
- b. Principle of operation, block diagram, calibration, maintenance and troubleshooting, procedures for
 - All types of hearing aids
 - Audiometers
 - Immittance meters
 - Electro-acoustic impedance bridge
 - Induction loop system
 - Speech spectrograph
 - Artificial larynx
 - CAE analyzer
- c. Safety aspects, care and preventive maintenance of biomedical instruments

E. Introduction to digital signal processing**Unit 5 (15 hours)**

- a. Need for digital signal processing and its advantages over analog signal processing
- b. Analog to digital and digital to analog converters.
- c. Basics of an IIR and FIR systems,
- d. Applications of digital signal processing in speech and hearing field.

OA 050: LINGUISTICS, PHONETICS AND LANGUAGE SCIENCES**Unit 1: Linguistics (15hours)**

- a. Introduction to Linguistics -characteristics of language, difference between animal communication systems and human language. Functions of language brief introduction to different branches of linguistics and special reference to sociolinguistics, psycholinguistics, neurolinguistics and clinical linguistics
- b. Morphology -concepts of morph, allomorph, morpheme, bound free and compound forms, roots etc. Processes of word formation, content and function words, endocentric and exocentric constructions, form classes, grammatical categories.inflection and derivation, paradygmatic and syntagmatic relationship. Principles 'and practices of morphemic analysis.

Unit 2: Syntax, semantics and applied linguistics: (15hours)

- a. Syntax-different methods of syntactic analysis -IC analysis, phrase structure, grammar, transformational generative grammar -Introduction to the major types of transformations. Sentence types, notions about competence versus performance, deep structure versus surface structure, acceptability versus grammaticality, language versus parole etc.
- b. A brief introduction to semantics -semantic feature theory, pragmatics.

Unit 3: Phonetics and phonology (15hours)

- a. Introduction to phonetics and its different branches-articulatory, acoustic, auditory and experimental phonetics, air-stream mechanism, articulatory classification of sounds-segmentals and supra-segmentals, classification description and recognition of vowels and consonants. Pathological aspects of speech sounds production
- b. Transcription systems with special emphasis on IPA. Transcription of samples of normal and disordered speech.
- c. Introduction to phonology, classification of speech sounds on the basis of distinctive features, Application of distinctive feature theory to speech pathology and speech therapy, phonotactics, phonotactic patterns of English and Indian languages, phonemic analysis-Principles and practices; their practical implications for speech pathologists, common phonological processes like, assimilation, dissimilation, metathesis, haplology, epenthesis, spoonerism, vowel harmony, nasalisation, neutralization.

Unit 4: Language acquisition (15hours)

- a. Issues in first language acquisition-prelinguistic stages, linguistic stages, acquisition of Phonology, acquisition of morphology, acquisition of syntax, acquisition of semantics, acquisition of pragmatics, language and cognition.
- b. A brief introduction to theories and models of language acquisition -biological maturation theory, linguistic theory, behavioral theory, information processing theory, social interaction theory An integrated approach to these theories communicative competence and its development.
- c. Issues in second language acquisition -inter-language theory, language transfer and linguistic interference, the factors influencing second language acquisition/learning, differences between first language acquisition and second language acquisition/learning. Bilingualism.
- d. Applied linguistics with special reference to communication disorders. Usefulness of morphemic and syntactic analysis in planning speech and language therapy.

Unit 5: Issues in multilingualism (15hours)

- a. An introduction to the language families of the world.
- b. An introduction to the language families of India
- c. Writing systems -types of writing, history of writing systems, Indian writing systems.

OA 060: PSYCHOLOGY RELATED TO SPEECH AND HEARING

Unit 1 (7hours)

- a. Definition of clinical psychology – historical development, modern history of clinical psychology, its current status and scope as a specialty in health sciences, role of clinical psychology in speech and hearing disorders.
- b. Concept of normality and abnormality, models of mental disorders, biological, psychological, social models.

Unit 2 (12hours)

- a. methodology in clinical psychology – case history, clinical interviewing, clinical observation, types of psychological assessments, considerations for speech and hearing disorders
- b. classification of abnormal behavior; history, need, rationale , present systems DSM and ICD

Unit 3 (26hours)

- a. Motor development – early motor development –stages in motor development – manipulate behaviour, handedness, development of complex motor skills, motor development during later childhood and adolescence, decline with age
- b. Cognitive development – evolutionary growth of intelligence, growth from early childhood to adolescence, decline with age, piaget’s theory of cognitive development
- c. Emotional and social development
- d. Assessment of cognitive functions, personality, interpersonal relationships, diagnosis and tests used and interpretation of test results.

Unit 4 (18hours)

- a. Introduction definition of learning – scope and methods – types of learning – importance of studying psychology of learning in communication disorders
- b. Experimentation in learning – human and animal learning – quantitative assessment of learning, learning curves
- c. Theories of conditioning – classical conditioning by Pavlov and its principles, operant conditioning by Skinner and its principles.

Unit 5 (12hours)

- a. Biological, neurochemical, neuropsychological, neurophysiological correlates of learning
- b. Techniques derived based on operant conditioning, shaping, chaining, prompting, time-out, token economy, reinforcement and contingency management, aversive therapy.

OA070: GENETICS, PEDIATRICS AND NEUROLOGY**A. Genetics**

Unit 1 (4 hours). Principles of genetics -genes, human chromosome, cytogenetics, mitosis and meiosis, numerical aberrations, structural aberrations, the sex chromosome anomalies, symbols used in pedigree construction, traits, environment- genetic interactions influencing fetus.

Unit 2 (4 hours)

a. Laboratory techniques -indirect methods, direct methods, new techniques for genetics –cloning molecular genetics, study of DNA.

Unit 3 (4 hours)

a. Genetic components of communication impairment -MR, autism, dyslexia, specific reading disability, stuttering

Unit 4 (4 hours)

a. Genetic basis of hearing impairment-use of gene libraries in the study of the molecular genetics of auditory system epidemiology of genetic hearing impairment, audiological approach audiometric patterns and genetic hearing loss.

Unit 5 (4 hours)

a. Syndromes, communication disorders, hearing loss -chromosomal syndromes, single-gene syndromes polygenic-multifactorial syndromes, sporadic syndromes, environmental syndromes, genetic counseling.

Pediatrics**Unit 1: (3hours)**

a. Growth and development -basic concepts, growth from birth to puberty, growth during adolescent period.

Unit 2: (3hours)

a. Early identification of perinatal pediatric disorders leading to speech and hearing impairment.

Unit 3: (3hours)

a. Nutritional disorders in children -protein energy malnutrition, water soluble vitamins, fat soluble vitamins, trace elements.

Unit 4: (10hours)

a. Childhood disabilities -developmental diseases, cerebral palsy, attention deficit hyperactivity disorder, learning disability, childhood autism, early detection therapy for developmental delay

Unit 5 (6hours)

a. Genetic disorders -genetic counseling, mendellian disorders, chromosomal disorders, nontraditional modes of inheritance, management of genetic disorders, gene therapy, human genome mapping project (HGMP).

PART B: NEUROLOGY

Unit 1 (10hours)

- a. Central neural system -neural structure, applied anatomy, cranial nerves, blood supply, circle of Willi.
- b. Transmission of information in neural system-nerve fibres, synaptic transmission, action potential, chemical transmission, excitatory and Inhibitory potential, neuromuscular transmission.

Unit 2 (4hours)

- a. Developmental anomalies -spinal cord defects, syringomalacia and bulbia, Arnold chain malformations.
- b. Hydrocephalus-source and circulation of CSF, types and etiopathogenesis.

Unit3 (2hours)

- a. infections-meningitis, encephalitis

Unit 4 (10hours)

- a. Cerebrovascular diseases -ischemic brain damage -hypoxic ischaemic encephalopathy, cerebral infarction -intracranial hemerrhage -intracranial, subarachnoid.
- b. Trauma to the CNS-subdural haematoma, epiduralhaemotoma parenchymal brain damages
- c. Demyelinating diseases-multiple sclerosis, perivenous encephalomyelitis
- d. Degenerative, metabolic and nutritional disorders-Alzheimer's disease, parkinsonism, metabolic hereditary, acquired-neuronal storage disorder, Wilson's disease, phenylketoneuria, nutritional- Wernicke's encephalopathy, pellagra, alcoholic cerebellar degeneration.

Unit 5 (4hours)

- a. Tumours of the CNS -Gliomas, embryonaltumours of meninges, metastatic Peripheral nervous system -structure and function of peripheral nerve, nerve sheath tumours -schwannoma, neurofibroma and Von Recklinghausens's disease, malignant peripheral nerve sheath tumours.

IIInd year BASLP

OB010: NORMAL AND ABNORMAL ASPECTS OF ARTICULATION

PART A: PHONOLOGICAL DISORDERS

Unit 1 (10 hours)

- a. Definition of articulation, place and manner of articulation of different speech sounds, cardinal vowels, secondary cardinal vowels, secondary articulation
- b. Phonological development: Theories of pre linguistic development, phonological development.

Unit 2 (10 hours)

- a. Factors affecting the development of articulation
- b. Distinctive features -different systems and implications
- c. Material development to study articulatory behavior
- d. Acoustics of vowels and consonants.

Unit 3 (5hours)

- a. Misarticulation
 - Definition, epidemiological findings, incidence and prevalence
 - Causes -sensory, structural, motor and neurological causes
 - Types of misarticulation -lispings, rhotacism-definition, types and characteristics.

Unit 4 (10 hours)

- a. Factors related to misarticulation
- b. Assessment (i) Modes of testing (ii) Classification of articulation tests
- c. Articulatory and prosodic problems associated with hearing impairment, dysarthria, cerebral palsy and mental retardation.

Unit 5 (10 hours)

- a. Articulation therapy techniques
 - Definition and stages of articulation therapy -sequence of therapy -MIDVAS
 - Motoric approaches -progressive approximation, integral stimulation, motokinesthetic approach, phonetic placement, multiple phoneme approach, traditional therapy, programmed conditioning therapy, sensory motor therapy, motoric automatization

- Linguistic approaches -distinctive feature therapy, minimal pair therapy, language based therapy
- Instrumentation.

PART. B: MAXILOFACIAL ANOMALIES

A. Maxillofacial anomalies

Unit 1 (8hours)

- a. Embryology -development of the palate, lip and nose
- b. Types and classification of cleft lip and palate
- c. Causes -genetic, environmental and other causes

Unit 2 (8hours)

- a. Associated problems
 - Communication disorders
 - Feeding, psychological and dental problems
- b. Syndromes associated with cleft palate
- c. Assessment of cleft lip/palate and its sequelae -instrumental and perceptual.

Unit3 (6hours)

- a. Management of cleft lip and palate surgery, speech therapy, prosthesis

Unit4 (6 hours)

Velopharyngeal inadequacy

- Definition, causes and classification
- Compensatory articulation
- Assessment and management of VPI

Unit5 (2hours)

Glossectomy, mandibulectomy-types, speech characteristics and management.

0B020: FLUENCY AND ITS DISORDERS

Unit 1 (10hours)

- a. Fluency: definition, development of fluency, factors influencing fluency

- b. Definitions of intonation, rhythm, stress -development of intonation, rhythm, stress. Their implications to therapy
- c. Evaluation of fluency
- d. Other prosodic features in fluency disorders.

Unit 2 (15hours)

- a. Stuttering
 - Definition, etiology, epidemiological findings, prevalence and incidence
 - Stuttering: characteristics, nature of stuttering, adaptation effect, consistency effect, situational variability, stuttering and heredity.
- b. Normal non-fluency, primary stuttering, secondary stuttering
- c. Development of stuttering
- d. Differential diagnosis of developmental stuttering from neurogenic stuttering, cluttering, normal nonfluency.

Unit 3 (15hours)

- a. Introduction to theories of stuttering -organic vs. functional, cerebral dominance, diagnosogenic and learning theories, demands and capacities model
- b. Assessment and diagnosis of stuttering and associated problems, prevention of early stuttering.

Unit 4 (20hours)

- a. Therapy for stuttering
 - Rationale, prolongation, shadowing, habit rehearsal techniques, DAF, masking, shock therapy, desensitization, highlighting, time out, air flow and modified air flow, sequence of therapy
 - MIDVAS, transfer and maintenance, relapse and recovery from stuttering, measurement of therapy progress, naturalness rating.

Unit 5 (15hours)

- a. Cluttering- definition, etiology, characteristics, differential diagnosis, associated problems and assessment procedure, therapeutic consideration
- b. Neurogenic stuttering-characteristics, etiology, differential diagnosis and management issues. .

OB030: NORMAL AND ABNORMAL ASPECTS OF VOICE & LARYNGECTOMY

PART A: VOICE

Unit 1 (15hours)

a. Voice

- Definition, review of anatomy of the respiratory, phonatory and resonatory systems
- Development of voice and factors influencing
- Theories of phonation
- Characteristics of normal voice. Physiological, acoustical and aerodynamic correlates of voice
- Evaluation of voice and implication to abnormal voice.

Unit 2 (15hours)

a. Definition of normal and abnormal voice

- Causes and classification of abnormal voice
- Incidence and prevalence of abnormal voice.

b. Causes, diagnosis, differential diagnosis and therapy for

- Hysterical aphonia
- Spasmodic dysphonia
- Plica-ventricularis
- Mutational voice disorders
- Diplophonia

Unit 3 (5hours)

a. Vocal hyperfunctional disorders

- Vocal abuse
- Vocal nodule, vocal polyp, contact ulcer

b. Voice problems in geriatrics

Unit 4 (5hours)

a. Neurological problems resulting in voice disorders

b. Paralysis of the vocal cords -causes, types, characteristics, differential diagnosis and management

c. Voice problems in hearing impaired

d. Congenital voice disorders

Unit 5 (5hours)

a. Resonatory disorders-hypernasality, hyponasality, causes, characteristics and management.

b. Management of the problems of professional voice users

PART B: Laryngectomy**Unit 1 (15hours)**

a. Definition, incidence and prevalence

- b. Causes and symptoms of laryngeal cancer
- c. Types and characteristics of laryngectomy surgery
- d. Total laryngectomy-definition, characteristics, associated problems
- e. Assessment of laryngectomy.

Unit 2 (15hours)

- a. Management of laryngectomy
 - Esophageal speech –anatomy, candidacy, different types of air intake procedure, speech characteristics in esophageal speech
 - Tracheo-esophageal speech -anatomy, candidacy, different types of TEP, fitting of prosthesis, speech characteristics, complications in TEP
 - Artificial larynx -different types, selection of artificial larynx, speech characteristics
 - Pharyngeal speech, buccal speech, ASAI speech, gastric speech
 - Pre and post-operative counseling

0B040: DIAGNOSTIC AUDIOLOGY

PART A: DIAGNOSTIC AUDIOLOGY: BEHAVIOURAL TESTS

Unit 1 (8hours)

- a. Introduction to diagnostic audiology
 - Need for test battery approach in auditory diagnosis and integration of results of audiological tests.
 - Indications for administering audiological tests to identify-
 - Cochlear pathology
 - Retrocochlear pathology
 - Functional hearing loss
 - Central auditory processing disorders

Unit 2 (8hours)

- a. Tests to differentiate between cochlear and retrocochlear pathology
 - ABLB, MLB
 - SISI,modified SISI
 - Tests for adaptation
 - Bekesy audiometry
 - Brief tone audiometry
 - PIPB function

Unit 3 (5hours)

- a. Tests to detect pseudohypoacusis
 - Pure tone tests including tone in noise test, stenger test
 - Speech tests including Lombard test, Stenger test, lip-reading test, Doeffler -Stewart test

- Identification of functional hearing loss in children

Unit 4 (8hours)

Tests to detect central auditory disorders -

- a. Monoaural low redundancy tests-(i) Filtered speech tests, (ii) Time compressed speech test, (iii) Speech-in-noise test, (iv) SSI with ICM, (v) Other monaural low redundancy tests.
- b. Dichotic speech tests -(i) Dichotic digit test, (ii) Staggered spondaic word test, (iii) Dichotic CV test, (iv) SSI with CCM, (v) Competing sentence test, (vi) Other dichotic speech tests.
- c. Binaural interaction tests-(i) RASP (ii) BFT, (iii) MLD, (iv) Other binaural interaction tests
- d. Temporal ordering tasks (i) Pitch pattern test, (ii) Duration pattern tests, (iii) Other temporal ordering tests.

Unit 5 (8hours)

- a. Variables influencing central auditory assessment
 - Procedural variables
 - Subject variables
- b. Test findings in subjects with central auditory disorders
 - Brainstem lesion
 - Cortical and hemispheric lesion
 - Interhemispheric dysfunction
 - CAPD in children
 - CAPD in elderly

PART B: DIAGNOSTIC AUDIOLOGY: PHYSIOLOGICAL TESTS

Unit 1 (10hours)

Immittance evaluation

- a. Introduction
- b. Principle of immittance evaluation, instrumentation
- c. Tympanometry -tympanometric peak pressure, static immittance, gradient/tympanometric width, compensated tympanogram
- d. Reflexometry: reflex path way, ipsilateral and contralateral acoustic reflexes, special tests, Jerger box pattern
- e. Clinical application of immittance evaluation
- f. Immittance evaluation in the pediatric population

Unit 2 (10hours)

Auditory brainstem response

- a. Introduction and classification of AEPs
- b. Instrumentation
- c. Test procedure

- d. Factors affecting auditory brainstem responses
- e. Interpretation of results and clinical application
- i. ABR in the pediatric population

Unit 3 (5hours)

Middle and long latency auditory evoked potentials

- a. Test procedure
- b. Factors affecting middle and long latency evoked potentials
- c. Interpretation of results and clinical application
- d. Findings in the pediatric population

Unit 4 (8hours)

Otoacoustic emissions

- a. Introduction and classification of OAEs
- b. Instrumentation
- c. Measurement of OAE procedure
- d. Interpretation of results and clinical application
- e. Findings in the pediatric population

Unit 5 (5hours)

Vestibular system and assessment

- a. Introduction to structure and function
- b. Symptoms of vestibular disorders
- c. Assessment
 - Caloric tests
 - Behavioral tests
 - Electronystagmography

0B050: EDUCATIONAL AUDIOLOGY

Unit 1 (5hours)

- a. Definitions and goals in aural rehabilitation, classification of hearing handicap
- b. Early identification and its importance in aural rehabilitation.

Unit 2 (6hours)

- a. Unisensory vs. multisensory approach
- b. Acoupedic approach

- c. Manual vs. oral form of communication, manual communication systems that parallel English (Manual alphabet); interactive systems (cued speech: Rochester method); those alternative to English (ASL) Indian Sign Language, Contrived system (SEE-I, SEE-II, Signed English)
- d. Total communication.

Unit 3 (6hours)

- a. Methods of teaching language to the hearing impaired
- b. Natural method: maternal reflective method
- c. Structured method (grammatical method); Fitzgerald key, box technique, others
- d. Computer aided method.

Unit 4 (9hours)

- a. Educational placement of hearing impaired children:
 - Preschool training
 - Integration
 - Partial integration
 - Segregation: day school vs. residential school
- b. Criteria for recommending the various educational placements
- c. Factors affecting their outcome.

Unit 5 (9hours)

- a. Educational problems of hard-of-hearing in India.
- b. Counseling the parents and teachers regarding the education of the hearing handicapped
- c. Setting-up classrooms for the hearing handicapped
- d. Home training - need, preparation of lessons, correspondence programs, follow-up.

REHABILITATIVE AUDIOLOGY

Unit 1 (6hours)

Management of children with special needs

- a. Management of the deaf-blind child
- b. Management of children with central auditory processing problems

Unit 2 (10hours)

Speech reading

- a. Definitions

- b. Need (i) For those with hearing aids; tactile devices; cochlear implants (ii) for those without devices (iii) for children (iv) for adults. .
- c. Visibility of speech sounds -audiovisual perception vs. visual perception
- d. Visual perception of speech by the hard-of-hearing
- e. Tests for speechreading ability
 - Denver quick test of lipreading ability
 - John Tracy clinic test
 - Utlay test
 - Helen test
 - Mason multiple choice test

Unit 3 (8hours)

- a. Factors influencing speechreading
 - Related to the speechreader
 - Related to the speaker
 - Related to the environment
- b. Methods of training: analytical vs synthetic (including speech tracking)
- c. Individual and group training
 - Purpose
 - Requirement for each -i.e. space, number, selection of participants
 - Other consideration

Unit 4(8hours)

Auditory learning

- a. Definitions and historical background
- b. Role of audition in speech and language development in normal children and its application in education of the hearing impaired
- c. Factors in auditory training: Motivation of the case, intelligence. age, knowledge of progress, etc.
- d. Methods of auditory training
- e. Individual vs group auditory training

Unit 5 (8hours)

- a. Communication strategies
 - Anticipated strategies
 - Repair strategies
- b. Speech reading activities
 - For adults and children
 - For individual vs. group activities
- c. Auditory training activities

- For patients of different age groups
- In patients with congenital and acquired hearing losses
- Verbal vs. nonverbal material
- For individual vs group activities

0B 060: OTOLARYNGOLOGY

Unit 1 (25hours)

a. Diseases of the external, middle and inner ear leading to hearing loss -congenital malformations, traumatic lesions, infections.

Unit 2 (9hours)

a. Other causes of hearing loss -facial paralysis, tumors of the cerebello-pontine angle, acoustic neuroma.

Unit 3 (9hours)

a. Causes of speech disorders -diseases of the mouth, tumours of jaws and oral cavity, nasopharynx and pharynx, pharyngitis, diseases of tonsils and adenoids.

Unit 4 (25hours)

a. Congenital diseases of larynx -differences between an infant and an adult larynx, stridor, causes of infantile stridor, disorders of structure-laryngomalacia, Bifid epiglottis, laryngeal web, atresia, laryngeal cleft, paralysis of vocal cords, tumors and cysts, laryngitis, laryngeal trauma and stenosis.

Unit 5 (7hours)

a. Oesophageal conditions: congenital abnormality-atresia, tracheo -oesopharyngeal fistula, stenosis, short oesophagus, Neoplasms -benign, malignant, lesions of the oral articulatory structures.

0B070: STATISTICS AND RESEARCH METHODS & EPIDEMIOLOGY RELATED TO SPEECH AND HEARING

Unit 1 (10 hours)

a. Introduction, definition, importance of statistics in behavioural sciences, descriptive statistics and inferential statistics, usefulness of qualification in behavioural sciences (application to speech and hearing)

b. Measurements – scales of measurements – nominal, ordinal, interval and ratio scales.

Unit 2 (10 hours)

a. Data collection, classification of data, class intervals, continuous and discrete measurements, drawing frequency polygon, types of frequency polygon, histogram, cumulative frequency curve, Ogives, drawing inference from graph. Methods of sampling, use of sampling, use of sampling methods in various situations, types of sampling, interference.

Unit 3 (10 hours)

a. Measures of central tendency, need, types: mean, median, mode, working of these measures with illustrations. Measures of variability – need, types: range, quartile deviation, average deviation, standard deviation, variance, interpretation. Normal distribution- general properties of normal distribution, theories of probability, illustration of normal distribution, area under the normal probability curve and application. Variance from the normal distribution, skewness, quantitative measurement of skewness, kurtosis, measurement of kurtosis, Factors contributing for non normal distribution.

Unit 4 (10 hours)

a. Correlation – historical contribution, meaning of correlation, types: product moment correlation, variation of product- moment correlation, rank correlation.

b. Methods of significance – need for, significance of the mean, sampling error, significance of differences between means, interpretation of probability levels, small samples, large samples.

Unit 5 (10 hours)

a. An introduction to research – the formal and formative approaches

b. Methods of research in behavioural sciences – research designs, measuring, purpose, principles, needs, applications between group designs and single subject research designs.

c. Doing, reporting and evaluation research – formulation of research questions, principles of good writing, internal consistency evaluation, evaluation of research reports.

Epidemiology

Unit 1 (5hours)

a. History of speech and hearing

b. Population at risk for hearing loss and communication delay at risk children, established risk children, high risk checklist.

Unit 2 (7 hours)

- a. Incidence and prevalence of communication disorders, speech defects in general, phonological disorders, stuttering, voice disorders, language disorders -in children, adults and geriatric population,
- b. Incidence and prevalence of hearing loss -in children, adults and geriatric population, in general various types of hearing loss.

Unit 3 (3 hours)

- a. Epidemiologic methods -questionnaire survey, screening, personal survey, testing, media.

Unit4 (5 hours)

- a. Practicals I -school screening for incidence of communication disorders and hearing loss in rural and urban population.

Unit 5 (5 hours)

- a. Practicals II -community services -survey for incidence of communication disorders and hearing loss in
 - Rural population
 - Urban population
 - Children
 - Adults
 - Geriatrics

IIIrd year BASLP

OC010: MOTOR SPEECH DISORDERS AND DYSPHAGIA

PART A: MOTOR SPEECH DISORDERS IN CHILDREN

Unit1 (15hours)

- a. Introduction to neuromotor organization and sensorimotor control of speech
 - Motor areas in cerebral cortex, motor control by sub cortical structures, brainstem, cerebellum and spinal cord
 - Central nervous system and peripheral nervous system in speech motor control
 - Centrifugal pathways and motor control
 - Neuromuscular organization and control
 - Sensorimotor integration.
 - Introduction to motor speech disorders in children-dysarthria and developmental apraxia

Unit 2 (10hours)

a. Cerebral Palsy

- Definition, causes and classification
- Different types of cerebral palsy
 - Disorders of muscle tone -spasticity, rigidity, flaccidity, atonia
 - Disorders of movement -Hyperkinesias and dyskinesias -Ballismus, tremor, tic disorder,
 - Myoclonus, athetosis, chorea, dystonia, hypokinesias
 - Disorders of coordination - ataxia

Neuromuscular development in normals and cerebral palsy

Reflex profile.

Associated problems.

- Assessment of speech in cerebral palsy -objective and subjective methods
- Differential diagnosis of cerebral palsy
- Speech and language problems in cerebral palsy
- Introduction to different approaches .in neuromuscular education (Bobath, Phelps,etc)
- Speech rehabilitation in cerebral palsy
 - Verbal approaches -vegetative exercises, oral sensorimotor facilitation techniques,
 - compensatory techniques-correction of respiratory, phonatory, resonatory& articulatory errors
- Team approach to rehabilitation
- Neuro-surgical techniques for cerebral palsy

Unit 3 (5hours)

a. Apraxia of speech in children or developmental apraxia

- Definition.
- Description -verbal and nonverbal apraxia
- Differential diagnosis-dysarthria and other developmental speech disorders
- Management of developmental apraxia of speech -facilitation techniques for oral motor movements, speech therapy techniques, generalization of speech

Unit 4 (5hours)

a. Syndromes with motor speech disorders. Examples-

- Juvenile progressive bulbar palsy, Congenital supranuclear palsy, Guiliain-Barre syndrome, Duchenne Muscular dystrophy

Unit 5 (5hours)

a. Application of alternative and augmentative communication methods in developmental

dysarthrias and developmental apraxia of speech -symbol selection, techniques for communication, assessment for AAC candidacy, choosing an appropriate system and technique, training communication patterns, effective use of AAC.

PART B: MOTOR SPEECH DISORDERS IN ADULTS

Unit 1 (10hours)

- a. Definition and classification of dysarthria in adults
- b. Types of dysarthria in adults
- c. Neurogenic disorders leading to dysarthria in adults
 - Vascular disorders -dysarthria following strokes, CVA, cranial nerve palsies and peripheral nerve palsies
 - Infection condition of the nervous system –eg: Meningitis, polyneuritis and neurosyphilis
 - Traumatic conditions -traumatic brain injury and dysarthria
 - Toxic conditions -dysarthria due to exogenic and endogenic causes.
 - Degenerative and demyelinating conditions-multiple sclerosis, Parkinsons disease, motor neurone diseases, amyotrophic lateral sclerosis.
 - Genetic conditions-Huntingtons chorea, Guiliain -Barre syndrome
 - Others leading to dysarthria -Anoxic conditions, metabolic conditions, idiopathic conditions and neoplasm.

Unit 2 (10hours)

- a. Assessment of dysarthria
 - Instrumental analysis
 - Physiological and electrophysiological methods.
 - Acoustics.
 - Advantages and disadvantages of instrumental analysis of speech in dysarthria
- b. Perceptual analysis -measures, standard tests and methods, speech intelligibility assessment scales, advantages and disadvantages of perceptual analysis of speech in dysarthrias
- c. Differential diagnosis of dysarthria from functional articulation disorders, apraxia of speech, aphasia and allied disorders

Unit 3 (5hours)

- a. Management of dysarthria -medical, surgical and prosthetic approaches -speech therapy
 - Vegetative exercises
 - Oral sensorimotor facilitation techniques
 - Compensatory approaches -correction of respiratory, phonatory. articulatory and prosodic errors
 - Strategies to improve intelligibility of speech

Unit 4 (5hours)

a. Apraxia of speech in adults

- Definition of verbal and nonverbal apraxia of speech
- Different types, characteristics and classification
- Assessment of apraxia of speech-standard test and scales, subjective methods and protocols
- Management of apraxia of speech-different approaches
- Improving intelligibility of speech.

Unit 5 (5hours)

a. Alternate and augmentative communication systems for adult dysarthric and apraxic individuals.

Classification of symbols, selection of systems, techniques for communication, assessment for AAC candidacy, choosing an appropriate system and technique, training communication partners, generalization of learning and effective use of AAC in adult dysarthrics and apraxics.

DYSPHAGIA

- a. Introduction to deglutition and its stages.
- b. Definition and causes of dysphagia
- c. Assessment
- d. Management

OC 020: CHILD LANGUAGE DISORDERS

Unit 1 (15 hours)

a. Review of theories of language acquisition in children

- Biological maturation approaches
- Cognitive approaches
- Linguistic approaches
- Information processing theories
- Behavior theory
- Pragmatic approaches

Unit 2 (15 hours)

a. Neurobiological correlates - neuroanatomical, neurophysiological and neurochemical aspects of language development

Unit 3 (15 hours)

a. Speech and language characteristics of children with

- Mental retardation/syndromes related to child language disorders
- Autism and pervasive developmental disorders
- Developmental dysphasia/specific language impairment

- Acquired dysphasia
- Learning disability/dyslexia.
- MSD/ attention deficit hyperactivity disorders

Unit 4 (15 hours)

- a. Diagnosis of speech and language disorders in children: tests and protocols
- Differential diagnostic characteristics of children with language disorders various behavioral and linguistic tests and profiles
 - Assessment procedures for normal and children with language disorders -medical, neurobehavioral, neurolinguistic measures.

Unit 5 (15 hours)

- a. Approaches and techniques for management of speech and language disorders in children - cognitive linguistic, behavioral, medical methods of treatment -team work.

OC 030: APHASIA AND OTHER LANGUAGE DISORDERS

Unit 1 (15 hours)

- a. Neurobiological aspects of language in adults
- Neuroanatomical, neurophysiological and neurochemical correlates for language function
 - Neurolinguistic models and language processes -connectionists, hierarchical, global, process and computational models.

Unit2 (15 hours)

- a. Historical aspects of aphasiology.
- Historical review and phases of aphasia and related adult language disorders
 - Review of definitions and causes of aphasia; TBI, RHD, dementia, schizophasia and PPA
 - Cortical and sub cortical aphasias, nature of language disorders in adults.

Unit 3 (15 hours)

- a. Classification of language disorders in adults
- Need for classification
 - Approaches to classification
 - Various classification systems
 - Characteristic features of the various types -speech, language and linguistic, behavioral and cognitive characteristics of adults with language disorders

Unit 4 (15 hours)

- a. Assessment of adult language disorders

- Assessment of speech, language, linguistic and cognitive behavior of adults with language disorders using various tests
- Linguistic investigations and implications in the assessment of adult language disorders
- Reflections on approaches to assessment in multilingual situation
- Theories of spontaneous recovery and prognostic indicators of adult language disorders.

Unit 5 (15 hours)

a. Intervention strategies for adult language disorders

- Principles of language intervention
- Techniques for intervention -medial, linguistic, behavioral and computational methods
- Team approach in rehabilitation of adult language disorders
- Counseling and home management for adult language disorders.

OC 040: HEARING AIDS

Unit 1 (5 hours)

a. Historical development of hearing aids

b. Review of basic elements of hearing aids -microphone, amplifier, -receiver/vibrator, cords, batteries.

Unit 2 (7 hours)

a. Type of hearing aids - Part A

- Body level, ear level.
- Binaural, pseudo binaural, monaural
- Directional hearing aids, modular hearing aids
- Group amplification -hard wire, induction loop, FM, infrared
- Implantable hearing aids.
- Master hearing aids

Unit 3 (7 hours)

a. Types of hearing aids -Parts

- Routing of signals, head shadow/baffle/diffraction effects
- Output limiting: peak clipping, compression
- Extended low frequency amplification, frequency transposition

Unit4 (7 hours)

a. Mechano-acoustic couplers (Ear molds)

- Types
- Procedure
- Effect of acoustic couplers on the hearing aid output

Unit 5 (10 hours)

- a. Electro-acoustic measurements for hearing aids
- Purpose, parameters, instrumentation, procedure, variables affecting EAM
 - Electro-acoustic measurements, BIS, IEC and ANSI standards
 - Environmental tests.

PART B: REHABILITATIVE TECHNOLOGY FOR HEARING IMPAIRED**Unit 1 (8 hours)**

- a. Recent advances in hearing aids
- Signal processing in hearing aids -BILL, TILL, PILL
 - Programmable and digital hearing aids
 - Signal enhancing technology

Unit 2 (7 hours)

- a. Assistive listening devices -types and selection (Telephones, Television, typing technology etc)

Unit 3 (10 hours)

- a. Hearing aid selection
- Pre-selection factors
 - Prescriptive and comparative procedures
 - Functional gain and insertion gain methods
 - Use of impedance, OAEs and AEPs audiometry
 - Hearing aids for conductive hearing loss
 - Hearing aids for children
 - Hearing aids for elderly.
 - Selection of non-linear programmable and digital hearing aids

Unit 4 (8 hours)

- a. Cochlear implants- components, terminology, candidacy, advantages and complications, brainstem implants.

Unit 5 (6 hours)

- a. Care, maintenance and trouble shooting of hearing aids
b. Counseling and, orienting the hearing aid user (Patient and significant others)

OC050: PEDIATRIC AUDIOLOGY

Unit 1 (15 hours)

- a. Need for identifying: mild hearing losses, conductive hearing losses, sloping hearing losses and fluctuating hearing losses
- b. High risk register.
 - Recommendations of the Joint Committee on infant screening -1994 and 2000 position statement
 - Universal hearing screening vs high risk register
 - High risk register usage in India

Unit 2 (15 hours)

- a. Methods used to screen for conductive hearing losses and SN hearing losses
 - Behavioral tests (awakening tests, bottle feeding test, behavioral observation audiometry, etc)
 - Objective methods (Immittance audiometry, reflexometry, Crib-O-Gram, auditory cradle, accelerometer recording system, reflex inhibition audiometry, evoked response audiometry, otoacoustic emissions, etc)

Unit 3 (10 hours)

- a. Development of human auditory system
- b. Development of auditory behavior -prenatal hearing, newborn hearing, auditory development from 0-1 year.

Unit 4 (20 hours)

- a. Hearing testing in neonates and infants
 - Behavior observation audiometry
 - Conditioning techniques:
 - Visual reinforcement audiometry and its modifications including CORA
 - PIWI and peep show audiometry
 - TROCA
 - Play audiometry
 - Others
- b. Modifications required while testing multiply handicapped children

Unit 5: (15 hours)

- a. Speech audiometry in children.
 - Modification required while carrying out speech audiometry in children
 - Speech detection threshold, Speech recognition threshold
 - Speech recognition scores -PBK, WIPI, NU Chip, Early speech perception test, Ling's six sound tests, auditory number test, tests available in Indian languages
 - BC speech audiometry.

OC 060: ENVIRONMENTAL AUDIOLOGY

Unit 1 (20 hours)

- a. Noise in the environment and effects of noise: Definition of noise, sources -community, industrial, music, traffic and others, types -steady and non-steady
- b. Auditory effects of noise exposure
 - Historical aspects
 - TTS and recovery patterns
 - PTS
 - Histopathological changes
 - Effect of noise on communication, SIL, AI
 - Noy, PNdB, PNL, EPNL, NC curves, NRR. SNR
- c. Non-auditory effects of noise exposure
 - Physiological/somatic and psychological responses, stress and health, sleep, audio-analgesia, effects on CNS and other senses
 - Effects of noise on work efficiency and performance

Unit 2 (15 hours)

- a. Audiometry in NIHL
 - Puretone audiometry.
 - Base line and periodic monitoring tests, high frequency audiometry, brief tone audiometry correction for presbycusis
 - Instrumentation: Manual audiometer, automatic audiometer
 - Testing environment
 - High frequency audiometry
 - Speech audiometry
 - Speech discrimination tests with and without the presence of noise
 - Filtered speech tests and time compressed speech tests
 - Other audiological evaluations: Impedance audiometry, ERA, OAE, Tests for susceptibility

Unit3 (10 hours)

- a. Noise and vibration measurement - Instrumentation and procedure for indoor and outdoor measurement of ambient noise, traffic noise, aircraft noise, community noise and industrial noise

Unit4 (15 hours)

- a. Hearing conservation
 - Need for hearing conservation program, steps in hearing conservation program, ear protective device (EPDs)
 - Types: ear plugs, ear muffs, helmets, special hearing protectors, merits and demerits of each

- Properties of EPDs: attenuation, comfort, durability, stability, temperature, tolerance
- Evaluation of attenuation characteristics of EPDs
- Toughening

Unit 5 (15 hours)

a. Legislations related to noise

- DRC-definition, historical aspects, use of TTS and PTS, information in establishing DRC, CHABA, AFR 160-3, AAOO, ASA-Z 24.5, damage risk contours, Walsh-Healey Act, OSHA, EPA, Indian noise standards
- Claims for hearing loss: Fletcher point eight formula, AMA method, AAOO formula, California variation in laws, factors in claim evaluation, variations in laws and regulations, date of injury, evaluation of hearing loss, number of tests
- Indian acts/regulations, American acts.

OC 070: SCIENTIFIC ENQUIRY IN SPEECH AND HEARING

Unit 1 (5 hours)

Scientific status of speech-language pathology and audiology

- Speech language pathology and audiology as behavioral sciences
- Need for scientific enquiry in speech-language pathology and audiology
- Choosing a research problem, formulation of research question, statement of research question, formulation of hypothesis, types of hypothesis.

Unit 2 (10 hours)

a. Parameters for scientific research in speech-language pathology and audiology

- Identification of variables and the types
- Types of data and its nature
- Measurement procedures in speech-language pathology and audiology
- Instrumental and behavioral measures and recording procedures

Unit 3 (10hours)

a. Research methods and designs

- Types of research in speech-language pathology and audiology and their application to clinical population and community research
- Research designs for speech-language pathology and audiology, discussion of hypothetical research problem, assessment and evaluation of feasibility of application of various research designs for speech-language pathology and audiology

Unit 4 (7 hours)

a. Behavioral statistics

- Basic statistical procedures for behavioral research
- Application with hypothetical illustrations

Unit 5 (6 hours)

a. Documentation of research

- Reporting research -organization, analysis and presentation of data
- Components of research article, report writing style
- Ethics of research in behavioral sciences
- Qualities of a researcher/scientific clinician.

PART B: ORGANIZATIONS AND ADMINISTRATION OF SPEECH AND HEARING CENTRES

Unit 1 (6 hours)

a. Rehabilitation of the speech and hearing handicapped

- Need for rehabilitation and hearing conservation
- Functions of speech and hearing centers in different set-ups
- Private practice, evaluation based practice
- Government organizations, NGOs
- Community based rehabilitation
- Role of itinerant speech therapist, anganwadis, resource teachers etc.

Unit 2 (10 hours)

a. Public laws and codes

- Code of ethics
- Rehabilitation Council of India , Disability related Acts
- Consumer protection Act, noise pollution Act and other public laws
- Facilities and concessions available for speech and hearing disabled

Unit 3 (6 hours)

a. Organization of speech and hearing centers

- Setting up a speech and hearing center.
- Organization of space, time and personnel
- Recruiting personnel- rules, salary etc.

Unit4 (10 hours)

a. Administrative procedures

- Budget, financial management and other issues
- Records and record keeping -different types

- Purchase formalities
- Leave rules and other benefits

Unit 5 (5 hours)

- a. Public education and marketing services
- Organizing camps, screening programs, seminars, workshops etc
 - Marketing professional skills
 - Ethical standards
 - Public education methods

BASLP Year Scheme

CLINICAL PRACTICALS

1.1: INTRODUCTION TO SPEECH AND LANGUAGE PATHOLOGY

Unit 1:

1. Reading practical work book
2. Demonstration of different types of wave forms -quasi-periodic, quasi-random, burst and Silence
3. Listening to cassettes:
 - (a) How they hear (b) Stress, rhythm and intonation (c) Cardinal vowels
 - (d) IPA transcription (e) Different speech disorders (f) Speech development
4. Measurement of the following in 5 normal subjects: (a) Habitual frequency (b) Frequency range (c) Optimum frequency (d) Intensity (e) Intensity range (f) Rise time (g) Fall time (h) Vital capacity (i) Mean air flow rate G) Phonation duration
5. Recording normal speech samples
6. Counting syllables in a standard passage
7. Production of various speech sounds and their identification
8. Listening to different pitch and their identification
9. Submission of practical records

Unit 2:

1. Oral mechanism examination on 5 normal children and 5 normal adults
2. Oral mechanism examination on 2 children with structural oral deficits and 2 adults with structural or neurogenic disorders
3. Perceptual analysis of speech and language parameters in 2 normal children and 2 normal adults

4. Perceptual analysis of speech and language parameters in any two disorders each in children and adults
5. Analysis of speech and language behavior of population from diverse cultural background
6. Observation of diagnostics procedures
7. Report on the available clinical facilities and clinical activities of the institute
8. Prepare a chart and show the developmental stages for speech and language behavior
9. Report on the available audiovisual material in the speech pathology laboratory and therapy clinic

SPEECH DIAGNOSTICS AND THERAPEUTICS

1. Observe the evaluation process of at least 5 different speech and language disorders in children
2. Observe the evaluation process of at least 5 different speech and language disorders in adults
3. Administer anyone standardized test on a child and adult with any speech and language disorder
4. Administration of standardized tests for assessment of delayed speech and language development such as REEL, SECS, 3DLAT, PPVT
5. Study the available normative data (Indian/Western) of speech such as respiratory, phonatory, resonatory and articulatory parameters
6. Study the available normative data (Indian/Western) of language such as phonology, semantics, and syntax, morphology and pragmatic measures.
7. Observation of various therapeutic methods carried out with children and adults with speech and language disorders
8. Familiarize with the sources for referral and parent counseling procedures
9. Preparation of a model diagnostic report of a patient with speech and language disorders
10. Preparation of a model diagnostic report of a patient with speech and language disorders
11. Preparation of a therapy kit
12. Submission of record.

1.2: INTRODUCTJON TO AUDIOLOGY

1. Development case history forms for adults and children
2. Take case history for 5 adults
3. Take case history for 5 children
4. Find out pathological condition based on case history for 10 adults
5. Plot audiogram for 10 cases
6. Administer audiometric version of Weber and Bing test on 5 normal hearing persons

AUDIOLOGICAL EVALUATION

1. Take audiograms for 10 normal hearing persons.
2. Find out bone conduction threshold on forehead/mastoid placement on 10 normal hearing persons
3. Find out SRT, SDT & SIS through headphone and bone conduction on 10 normal hearing persons

4. Find out MCL, UCL and dynamic range for 10 normal hearing persons
5. Administer puretone and speech audiometry on patients
6. Carryout masking for AC, BC and speech audiometry whenever indicated.

2.1: PHONOLOGICAL DISORDERS

Unit 1:

1. Perceptual analysis of normal articulation in five subjects
2. Administration of articulation tests to five subjects
3. Measurement of speech intelligibility in five subjects
4. Measurement of oral sensory perception in five subjects
5. Measurement of nasality in five subjects.
6. Measurements of resonance in twin tubes
7. Measurement of auditory discrimination
8. Visualization of glottal spectra, oral tract resonance and speech spectra for /a/, /i/, /u/
9. Submission of practical record

Unit 2:

1. Evaluation of two clients with phonological disorder
2. Use appropriate instruments for diagnosis and rehabilitation of phonological disorders
3. Use of software for evaluation
4. Preparation of an audiocassette or public education pamphlet
5. Pattern analysis of speech sample of a client with phonological disorder
6. Counseling the client/parent with phonological disorder
7. Administration of articulation test on one normal and one disordered client with phonological disorders
8. Submission of records

MAXILLOFACIAL ANOMALIES AND LARYNGECTOMY

1. Administration of diagnostic tests for cleft palate, glossectomy, mandibulectomy
2. Submission of a report on a client with cleft palate/glossectomy or mandibulectomy using the available performae and tests
3. Perceptual analysis of speech of one client each with cleft lip and palate, glossectomy and mandibulectomy
4. Submission of a report on a client with cleft palate/glossectomy/ mandibulectomy on therapy techniques used
5. Submission of record

2.2: FLUENCY AND ITS DISORDERS

Unit 1:

1. Analysis of fluency in one normal speech sample-child & adult percentage of individual/total disfluency
2. Rating intelligibility in five speech samples
3. Measurement of rate of speech- perceptual and instrumental in five speech samples.
4. Perceptual and instrumental analysis of intonation, rhythm and stress in five speech samples
5. Listening to tests of intonation, rhythm and stress
6. Submission of practical record.

Unit 2:

1. Analysis of disfluency of one client fluency disorders.
2. Perceptual analysis of 5 speech samples of fluency disorders
3. Instrumental analysis of 5 speech samples of fluency disorders
4. Perceptual and instrumental analysis of intonation, rhythm and stress of 5 clients with fluency disorders
5. Submission of therapy report of 2 clients with fluency disorders
6. Counseling of 2 clients with fluency disorders
7. Transcription and analysis of speech sample of a case with fluency disorder using IPA
8. Preparation of audiocassette and public education pamphlet on fluency disorder
9. Assessment of a client with fluency disorder on standard test for fluency assessment (SSI.SPI)

2.3: VOICE AND ITS DISORDERS

Unit 1:

1. Reading practical workbook
2. Perceptual analysis of five voices
3. Instrumental analysis of five normal voice for the following parameters: (a) Frequency and related parameters (b) Intensity and related parameters (c) Spectra (d) Electroglotography (e) Software for measuring various dimensions of voice, quality of voice (f) Recording of voice samples (g) Measurements (special) in musicians -pitch using pitch pipe, musical range.

Unit 2:

1. Perceptual analysis of 5 abnormal voices
2. Instrumental analysis of 5 abnormal voices
3. Submission of a report on diagnosis for 5 clients with voice disorders
4. Submission of a report on therapy for 5 clients with voice disorders
5. Submission of audiocassette and public education pamphlet on voice disorders
6. Transcription and analysis of speech sample of a client with voice disorder
7. Counseling a client with voice disorder
8. Submission of records

LARYNGECTOMY:

1. Administration of diagnostic tests for laryngectomy

2. Perceptual analysis of speech samples of TEP, esophageal and artificial larynx.
3. Insertion and use of different types of TEP prosthesis in a model.
4. Submission of record

2.4: DIAGNOSTICS AUDIOLOGY: BEHAVIOURAL TESTS

1. Administer tests to differentiate between cochlear and retro-cochlear pathology and interpret results.
2. Administer puretone and speech tests to detect pseudo-hypacusis
3. Administer puretone and speech tests to detect central auditory processing disorders
4. Interpretation of results of different audiological tests

DIAGNOSTIC AUDIOLOGY: PHYSIOLOGICAL TESTS

1. Carryout immittance evaluation on 10 normal hearing persons
2. Observation of immittance evaluation carried out on patients
3. Observation of recording of AEPs and OAEs

2.5: EDUCATIONAL AUDIOLOGY

1. Role-playing activities for teaching language to the hearing impaired
2. Prepare schedules for educational placement of 5 hearing impaired children having different hearing capacities
3. Counseling parents regarding education of the hearing impaired.

REHABILITATIVE AUDIOLOGY

1. Role-playing activities for speech reading, communication strategies and auditory learning
2. Compile activities on management of deaf-blind children
3. Compile activities on management of children with central auditory processing disorders

3.1: MOTOR SPEECH DISORDERS AND DYSPHAGIA IN CHILDREN.

1. Perceptual analysis of speech of any two clients with motor speech disorders
2. Instrumental analysis of speech of any two clients with motor speech disorders
3. Preparation of audiocassette and public education pamphlet on motor speech disorders in children
4. Transcription & analysis of phonological processes in motor speech disorders in children using IPA
5. Counseling a client/parent with motor speech disorder
6. Submission of record

DYSARTHRIA AND APRAXIA

1. Assess any two clients with dysarthria and apraxia
2. Perceptual analysis of speech of anyone client with dysarthria/apraxia
3. Instrumental analysis of speech of anyone client with dysarthria/apraxia
4. Submission of audiocassette of public education pamphlet on anyone aspect of dysarthria or apraxia
5. Transcription and analysis of speech sample of a client with dysarthria or apraxia using IPA
6. Counseling a client with dysarthria or apraxia
7. Submission of records

3.2: CHILD LANGUAGE DISORDERS

1. Evaluate 2 normal children and 2 children with language disorders
2. Record language samples of 2 children with language disorders
3. Transcription of language samples of children with language disorders
4. Provide therapy for 2 children with language disorders
5. Counseling parents of 3 children with language disorders
6. Submission of an audiocassette on any aspect of evaluation/therapy with a child language disorder
7. Submission of records

3.3: APHASIA AND OTHER LANGUAGE DISORDERS

1. Administer available tests for aphasia and related disorders
2. Submit report on assessment and evaluation of a client with aphasia and related disorders
3. Submit report on therapeutic intervention of a client with aphasia and related disorders
4. Transcription and analysis of speech samples of any two clients with aphasia and related language disorders
5. Submission of an audiocassette or public education pamphlet on aphasia or related language disorders.
6. Counseling a client/family member about the disorder
7. Submission of records

3.4: HEARING AIDS

1. Prepare a record of physical features of different types of hearing aids
2. Preparation of different types of ear molds.
3. Carryout electro acoustic measurements of various types of hearing aid.

REHABILITATIVE TECHNOLOGY FOR HEARING IMPAIRED

1. Hearing aid selection using functional and insertion gain measurements
2. Test patients with different ALDs
3. Familiarization with programmable and digital hearing aids
4. Troubleshooting of hearing aids
5. Demonstration and counseling of hearing aid use to patients

6. Compile information on cochlear implants regarding candidacy, cost, places where it is done and rehabilitation of cases.

3.5: PEDIATRIC AUDIOLOGY

1. Administer high-risk register to medical/non-medical professionals
2. Preparation of different types of ear molds.
3. Carryout electro-acoustic measurements of various types of hearing aids.

3.6: ENVIRONMENTAL AUDIOLOGY

1. Measurement of noise in the environment using different instruments
2. Measurement of ambient noise levels in the audiometric rooms
3. Administer puretone and speech audiometry to industrial worker
- 4 Counseling industrial workers regarding hearing conservation

3.7: SCIENTIFIC ENQUIRY IN SPEECH AND HEARING

1. Propose at least two research questions based on their clinical experience-(a) Identify. Variables in the above research questions (b) Propose suitable research designs for the above (c) Suggest appropriate statistical methods for the above (d) Organize and report hypothetical study of anyone of the above.
2. Critically evaluate one of the research articles from journal
3. Use computer statistical methodologies
4. Submission of records.

ORGANIZATION AND ADMINISTRATION OF SPEECH AND HEARING CENTERS

1. Preparation of administrative structure of at least two premier government organizations
2. Listing of government, non-government and private step-ups in the vicinity of their training center
3. Welfare measures available for the disabled in the country, the rules and regulations of Rehabilitation Council of India, ethical issues in the clinical practice.
4. Propose action plan for a minimum of three activities for public education.

REFERENCE BOOKS AND JOURNALS

OA 010: INTRODUCTION TO SPEECH AND LANGUAGE PATHOLOGY

Common to all units

Bloom, L & Lahey, M. (1978). Language development & language disorders. John Wiley & Sons, New York. Crystal, D. (1980). Introduction to language pathology. Edward Arnold Ltd, London.

Unit 1:

Dance F.X & Larson, C.E. (1972). Speech communication concepts and behaviors Holt, Rinehart and Winston Inc, New York Perkins, W.H. (1977). Speech Pathology - An applied behavioral sciences. C. V. Mosby Co., St. Louis.

Unit 2:

Borden, G.N & Harris, K.S. (1980). Speech science primer. Williams and Wilkins Co., USA. Daniloff, R. (1980). Physiology of speech and hearing -An introduction. Prentice Hall, New Jersey. Denes, P.B & Pinson, E.N. (1963), The speech chain. Bell Telephone Labs, USA. Fry, D.B. (1979). The physics of speech. Cambridge Univ. Press, New Jersey.

Unit 3:

Minifie, F.D. et al. (1973). Normal aspects of speech, hearing and language. Prentice Hall, New Jersey. Zemlin, W.R. (1968). Speech and hearing sciences. Prentice Hall Inc, New York."

Unit 4:

Crystal, D & Varley, R. (1993). Introduction to language pathology. Whurr Pub. London. Haynes, O.W. & Shulman, B.B. (1994). Communication development - foundations, processes and clinical applications. Prentice Hall, New Jersey. Hegde, M.N. (1994). A course book on aphasia and other neurogenic language disorders. Singular publishing group, San Diego.

Unit 5:

- Bloom, L & Lahey, M. (1978). Language development and language disorders. John Wiley and Sons Ltd., New York . Crystal, D. (1980). Introduction to language pathology. Edward Arnold Ltd. London. Grunewell, P. (1990) (Ed.). Developmental speech disorders - clinical issues and practical implementation. Churchill Livingstone Inc, New York.
- Milloy, N.R. (1991). Breakdown of speech causes and remediation. Chapman and Hall, London.
- Nation, J.E & Aram, D.M. (1982). Human communication disorders -An Introduction. 3rd Edn, Allyn and Bacon, Boston.
- Shulman, G.H. et al. (1998). Human communication disorders -An introduction. 3rd Edn. Allyn & Bacon Boston.
- Skinner, P.H & Shelton, R.L. (1978). Speech, language and hearing -normal processes and disorders. Addison-Wesley Pub, USA. Weiss, C.E & Lillywhite, H.S (1980). Clinical management of articulatory and phonologic disorders. Mosby and Co., New York.

SPEECH DIAGNOSTICS AND THERAPEUTICS

Common to all units

- Frattali, C.M. (1998). Measuring outcomes in speech language pathology. New York: Thieme.
- Meyer, S.M. (1998). Survival guide for the beginning speech-language clinician. Maryland: Aspen Publishers
- Owens, R.E. (1999). Language disorders: Functional approach to assessment and intervention. Boston: Allyn & Bacon Inc.
- Rosetli, L.M. & Kite, J.E. (1997). Early intervention for special populations of infants and toddlers. San Diego: Singular Pub Inc
- Shames, G.H. (2000). Counseling the communicatively disabled and their families. Boston: Allyn and Bacon.
- Shipley, K.G. & McAfer, J.G. (1998). Assessment in speech language pathology: A resource manual. San Diego: Singular Pub Inc.
- Tomblin, E. et al. (1994). Diagnosis in speech-language pathology. San Diego: Singular Pub. Inc.

Unit 1:

- Carrow; W.E. & Lynch, J.I. (1982). An integrative approach to language disorders in children. New York: Grune and Stratton.
- Dartey, F.L. & Spriesterbach (1978). Diagnostic methods in speech pathology. New York: Harper and Row.

Unit 2:

Shibley, K.G. & McAfer, J.G. (1998). Assessment in speech language pathology: A resource manual. San Diego: Singular Pub. Inc.

Tomblin, B. et al. (1994). Diagnosis in speech language pathology. San Diego: Singular Pub. Inc.

Unit 4:

Hegde, M.N. (1985). Treatment procedures in communicative disorders. 2nd Ed. Texas: Pro-Ed

Klein, H.B. & Nelson, M. (1994). Intervention planning for children with communication disorders: A guide for clinical practice and professional practice. New Jersey; Prentice Hall.

Leith, W.R. (1993). Clinical methods in communicative disorders. 2nd Ed. Texas: Pro-Ed.

Unit 5:

Shame, G.H. et al. (1998). Human communication disorders: An introduction. 3rd Ed. Boston: Allyn & Bacon.

OA 020: INTRODUCTION TO AUDIOLOGY

Common to all units

Davis, H & Silverman, S.R. (1970). Hearing and deafness -Part I. Holt, London: Rinehart and Winston.

Durrant, J.D & Lovrinic, J.H. (1977). Bases of hearing science. Baltimore: Williams and Wilkins.

Katz, J. (1985). Handbook of Clinical audiology. 3rd Ed.

Baltimore. Williams & Wilkins Newby, H.A. & Popelka, G.R. (1992). Audiology. 6th Ed. New York: Appleton-Century-Crofts

Silman S. & Silverman, C.A. (1991). Auditory diagnosis principles and applications. Chapter II, New York: Academic Press Inc.

Lipscomb, D.M. (1978). Noise and audiology. Chapter I, Baltimore: University Park Press Martin, F.N. (1994). Introduction to audiology. 5th Ed. Chapter II. New Jersey: Prentice Hall.

Unit 1:

Bess, F.H. & Humes, L.E. (1990). Audiology: The fundamentals. London: Williams and Wilkins.

Unit 2:

Lipscomb, D.M. (1988). Hearing conservation in industry, school and the military. Chapter II. London: Taylor and Francis

Unit 3:

Glorig, A. (1966). Audiometry: Principles and practices. Chapter V. Baltimore: Williams and Wilkins.

Unit 4:

Davis, H. & Silverman, S.R. (1970). Hearing and deafness. Part II. Holt, London: Rinehart and Winston.

Northern, J.L. & Downs, M.P. (1978). Hearing in children. Appendix. Baltimore: Williams & Wilkins Company

Prescod, S. V. (1978). Audiology handbook of hearing disorders. New York: van Nostrand Reinhold Company

Sataloff, R. T. & Staoff, J. (1993). Hearing loss. 3rd Ed. Chapter VIII, IX, X, XI, XII and XIII. New York: Marcel Derkker Inc.

AUDIOLOGICAL EVALUATION

Common to all units

Katz, J. (1994). Handbook of clinical audiology. 4th Ed. Chapter VII and IX. Baltimore: Williams & Wilkins. Martin, F.N. (1994). Introduction to audiology. 5th Ed. Chapter III, New Jersey: Prentice Hall.

Rintelmann, W.F. (1991). Hearing assessment. 2nd Ed. Chapter 1, Boston, London.

Rose, D.M. (1978). Audiological assessment. Chapter VI. New Jersey: Prentice Hall.

Silman, S. & Silverman, C.A. (1991). Auditory diagnosis principles and applications. Chapter II. New York: Academic Press Inc.

Unit 1:

Bess, F. H. & Humes, L.E. (1990). Audiology: The fundamentals. Chapter IV. London: Williams & Wilkins.

Glorig, A. (1966). Audiometry: Principles and practices. Chapter VI. Baltimore: Williams & Wilkins.

Unit 4:

Cudahay, E. (1988). Introduction to instrumentation in speech and hearing. Chapter IV. Baltimore: Williams & Wilkins.

Unit 5:

Martin, M. (1987). Speech audiometry. Chapter IV, VI, VII, XI and Appendix. London: Whurr Publishers.

OA 030: ANATOMY, PHYSIOLOGY AND PATHOLOGY OF SPEECH AND HEARING SYSTEMS

Anatomy, Physiology of speech systems -

Common to all units

- Palmer, J.M. (1984). Anatomy for speech and hearing. Harper and Row Publishers; New York.
- Perkins, W.H. & Kenith, R.O. (1986). Textbook of functional anatomy of speech, language and hearing. Taylor and Francis, London.
- Skinner, P.H. & Shelton, R.L. (1978). Speech, language and hearing - normal processes and disorders. 2nd Ed. John Wiley and Sons, New York.
- Zemlin, W.R. (1998). Speech and hearing science: Anatomy and physiology. Prentice Hall, Englewood Cliffs, New Jersey

Anatomy and Physiology of hearing system

- Beagly, H.A. (1981). Audiological medicine. Vol.1. Oxford, Oxford University Press,
- Gelfend, S.A. (1981). Hearing. Marcel Dekker Inc, New York.
- Hayes, D & Northern, J.L. (1996). Infants and hearing San Diego: Singular Publishing Group Inc.
- Northern, J & Downs, M.P. (1991). Hearing in children. 2nd Ed. Baltimore. Williams & Wilkins
- Newby, H.A. & Popelka, G.R. (1992). Audiology. 6th Ed. New York: Appleton-Century-Crofts.
- Silman, S & Silverman, C.A. (1991). Auditory diagnosis principles and applications. Academic Press Inc, New York, London, Tokyo.
- Bradford, L.J. & Hardy, W.G. (1979). Hearing and hearing impairment. New York: Grune and Stratton.
- Glorig, A. (Ed). (1966). Audiometry: principles and practices. Baltimore: Williams and Wilkins.
- Hodgson, W.R. (1980). Basic audiological evaluation. London: Williams and Wilkins .
- Kahane, J.C. & Folkins, J.F. (1984). Atlas of speech & hearing anatomy. Ohio: Charles E Merrill Publishing Co.
- Martin, F.N. (1981). Introduction to audiology. 2nd Ed. New Jersey, Prentice Hall.
- O'Neil, J.J. & Oyer, H.J. (1970). Applied in audiometry. New York. Dodd, Mead.
- Rose, D.M. (Ed) (1978). Audiological assessment. New Jersey: Prentice Hall

Pathology of speech and hearing systems

- Harsh Mohan (2000). Pathology-quick review and MCQs. Chapter I,II. Jaypee Brothers Medical Publishers (P) Ltd: New Delhi

OA 040: BIOMEDICAL INSTRUMENTATION AND ACOUSTICS

Unit 1:

Grob (1977). Basic electronics. Tokyo: McGraw Hill. ,

Unit 2:

Beranek (1967). Acoustic measurements illustrations, charts, diagrams, graphs, photos, plates, cables New York: John Wiley.

Fry, D.B. (1979). The physics of speech. New Jersey: Cambridge University Press.

Unit 3:

Rajaraman, V. (1992). Fundamental of computers. New Delhi: Prentice Hall of India.

Unit 4:

Grob (1982). Electronic circuits and applications. London: McGraw Hill.

Unit 5:

Borden, G.N. & Harris, K.S. (1980). Speech science primer. USA: Williams & Wilkins Co.

Fant, G. (1960). Acoustic theory of speech production. Hague: Mouton and Co.

Lieberman, P. (1977). Speech physiology and acoustic phonetics. New York: McMillan Publishing Co.

OA 050: LINGUISTICS, PHONETICS AND LANGUAGE SCIENCES

Linguistic and Phonetics

Atkinson, Kilby and Roca (1982). Foundations of general linguistics. London: George Allen and Unwin.

Ball & Martin, J. (1995). Phonetics for speech pathology. Delhi: AITBS Publishes, India.

Ball, Rahilly & Tench (1996). The phonetic transcription of disordered speech. San Diego: Singular Publishing, Group inc.

Bhaskara Rao, P. (1972). Practical phonetics. Poona: CASL. University of Poona.

Brosnahan & Marnberg (1970). Introduction to phonetics. Cambridge: Cambridge University Press.

Galford, J.C. (1982). Fundamental problems in phonetics. Edinburgh: University Press.

Clark and Yallop (1999). An introduction to phonetics and phonology. Oxford: Blackwell Publishes Inc.

Dodrovolsky, M. & O'Grady, W. (1989). Contemporary linguistics: An introduction. New York: St. Martin's Press Inc.

- Elgin, S.H. (1973). What is linguistics? New Jersey: Prentice Hall Inc.
- Falk, J.S. (1973). Linguistics and language: A survey of basic concepts and implication. New York: John Wiley & Sons.
- Hockett (1976). A course in modern linguistics. New Delhi: Oxford and IBH.
- International Phonetic Association (1999). Handbook of International Phonetic Alphabet. Cambridge, Cambridge University Press.
- Ladefoged, P. (1982). A course in phonetics new York: Harcourt Brace Jovanovich Inc.
- Lyons, John (1981). Language and linguistics. Cambridge: Cambridge University Press.
- Parker F Riley Kathryn (1994). Linguistics for non-linguists. Boston: Allyn and Bacon.
- Pike, K.L. (1972). Phonetics. Ann Arbor: University of Michigan Press.
- Robins, R.H. (1984). Genera/linguistics. London: Longmans.
- Radford et al. (1999). Linguistic: An introduction. Cambridge: Cambridge University Press.
- Shriberg& Kent (1982). Clinical phonetics. New York: John Wiley & Sons. Spencer & Andrew (1996). Phonology. Oxford: Blackwell Publishers Inc.
- Waengler, J.B (2000). Articulatory and phonological impairments. Boston: Aliyn&Becon.
- Ziegler-&Degar (Eds) (1998). Clinical phonetics and linguistics. London: Whurr Publishers Ltd.

Language Sciences

- Bloom, L. (1970). Language development: Form ad function in Emergin grammars. Cambridge: MIT Press.
- Bloom, L. (1970). Language development from two to three. Cambridge: Cambridge University Press.
- Cattel, R. (2000). Chlidren's language. London: Cassel.
- Crystal, D. (1976). Child language, leaming and linguistics. London: Edward Arnold.
- Lane &Molyneauz (1992). The dynamics of communicative development. New Jersey: Prentice Hall.
- Lyons, John (1981). Language and linguistics. Cambridge: Can\bridge University Press.
- Nelson, N.W. (1998). Childhood language disorders in context.
- Reich, P.A. (1986). Language development. New Jersey: Prentice Hall.
- Singleton, D. (1989). Language acquisition: The age factor. Clevedon: Multilingual Matters Ltd.
- Shore, C.M. (1995). Individual differences in language development. Vol.7, Thousand Oaks: Sage Publications.
- Taylor, Orlando, L. (Eds) (1986). Nature of communication disorder in culturally and linguistically diverse populations. San Diego: College Hill Press.
- Thirumalai, M.S. (1977). Language acquisition: Thought and disorder. Mysore: CIIL

OA 060: PSYCHOLOGY RELATED TO SPEECH & HEARING

Unit 1:

Bemstein, D.A. & Nietzel, M.T. (1980). Introduction to clinical psychology. New York: McGraw-Hill Book Co.
Glemen (1969). Abnormal psychology and modern life. Tarapore: Bombay.

Unit 2:

Page, J.D. (1947). Abnormal psychology. McGraw Hill, Bombay.

Unit 3:

Hurlock (1970). Child's growth and development 51Ed. New Delhi: McGraw Hill.
Papalia, D.E. (1975). A child's world: Infancy through adolescence. New York: McGraw Hill.
Solberg, P.A. & Zubek, J.P. (1954). Human development. New York: Hill Book Company.
Williams, M. (1965). Mental testing in clinical practice. London: Pergaman Press.

Unit 4:

Bugelski (1966). Psychology of learning. New York: Rinchart Hort.

Unit 5:

Coleman, J.C. (1971). Psychology of effective behavior. Tarapore: Bombay
Rathna, N. (1968). Behavior therapy in speech disorder. Mysore: AIISH Publications.

OA 070: GENETICS, PEDIATRICS AND NEUROLOGY

Genetics

Jung, J.H., Gagne. J.P., Godden, A.L., Leeper, H.A., moon, J.B. & Seewald, R.C. (1989). Genetic syndromes in communication disorders. Chapter I, Texas: Proed. Inc.
Ludlow, C.L. & Gooper, J.A. (1963). Genetic aspects of speech and language disorders. Chapter IV, New York: Academic Press.
Martin, A., Reord, A. & Styhens, D. (Eds) (1996). Genetics and hearing impairment. London: Whnes Publishers
Shprintzen, R.J. (1997). Genetics, syndromes and communication disorders. Chapter VII, London: Singular Publishing Group Inc.

Pediatrics

- Lloyd, L.L. (1976). Communication assessment and intervention strategies. Chapter II. London: University Park Press
- MacMohan, B., Pugu, T.F. & Ipson, J: (1960). Epidemiologic methods. Boston: Little Brown Co.
- Pandey, R.S. & Advani, L. (1995). Perspectives in disability and rehabilitation. New Delhi: Vikas Publishing House Pvt. Ltd.
- Paul, J.R. (Ed) (1966). Clinical epidemiology. 2nd Edn. Chicago: University of Chicago Press.
- Rosetti, L.M. (1996). Communication intervention: Birth to three. Chapter I. San Diego: Singular Group Inc.
- Travis, L.E. (1971). Handbook of speech pathology and audiology. Chapter 24. New Jersey: Prentice Hall.

Neurology

- Adams, R.D. & Sidman, R.L. (1968). Introduction to neuropathology. New Jersey: McGraw-Hill
- Garden, E. (1968). Fundamental of neuro. V, Edn. Philadelphia: Sarenders Co.
- Walton, J.N. (1977). Brains diseases of the neuroscience. VIII Ed. DeHl; Oxford University Press
- Weehsler, I.S. (1963). Clinical neurology. IX Ed. Philadelphia: W.B. Sarenders.

OB 010: NORMAL AND ABNORMAL ASPECTS OF ARTICULATION

Phonological Disorders

Common to all units

- Bemthal, J.E. & Bankson, N.W. (1981). Articulation disorders. New Jersey: Prentice Hall Inc.
- Carrell, J.A. (1968). Disorders of articulation. Van Riper series. New Jersey; Prentice Hall: Foundation of speech pathology series.
- Jacqueline Ballman & Waengler (2000). Articulatory and phonological impairment: A clinical focus. Boston: Allyn & Bacon. .
- Klein, E.S. (1996). Clinical phonology. San Diego: Singular Publishing Group.
- McReynolds, L. & Engmann, D. (1976). Distinctive feature analysis of misarticulation. Baltimore: University, Park Press.
- Stoel-Gammon (1985). Normal and disordered phonology in children. Austin: Pro-Ed.
- Van Riper, C. & Irwin, J. V. (1958). Voice and articulation. New Jersey: Prentice Hall Inc.
- Waegler, J.B. (2000). Articulatory and phonological impairments. Boston: Allyn & Bacon.
- Weiss, C.E. & Others (1997). Clinical management of articulatory and phonological disorders. Baltimore: Williams & Wilkins.

Yavas, M. (1998). Phonology development and disorders. San Diego: Singular Publishing Group.

Unit 1: Painter, C. (1979). An introduction to instrumental phonetics. Baltimore: University Park press.

Singh, S. (1976). Distinctive features. Baltimore: University Park Press.

Unit 2:

Hanson 1983. Articulation. Philadelphia: Saunders

Jacqueline Ballman & Waengler (2000). Articulatory & phonological impairment: A clinical focus. Boston: Allyn & Bacon.

Lowe, R.J. (1994). Phonology. Baltimore. Williams and Wilkins.

Unit 3:

Ball, M.J. & others (1996). Phonetic transcription of disordered speech. San Diego: Singular Publishing Group.

Bleile, K.M. (1995). Manual of articulation and phonological disorders. San Diego: Singular Publishing Group.

Elbert, Mgerut (1986). Handbook of clinical phonology. London: Taylor & Francis.

Fletcher (1992). Articulation. San Diego: Singular Publishing Group

Ingram, D. (1990). Phonological disability in children. London: Whurr Publisher.

Lowe, R.J. (1994). Phonology. Baltimore: Williams & Wilkins.

Unit 4:

Bleile, K.M. (1995). Manual of articulation and phonological disorders. San Diego: Singular Publishing Group.

Howell Jdean, E. (1995). Treating phonological disorders In children. London: Whurr Publishers.

Unit 5:

Bleile, K.M. (1995). Manual of articulation and phonological disorders. San Diego: Singular Publishing Group.

Fletcher (1992). Articulation. San Diego: Singular Publishing Group.

Howell Jdean, E. (1995). Treating phonological disorders in children. London: Whurr Publishers.

Ingram, D. (1990): Phonological disability in children. London: Whurr Publisher.

Johnson, J.P. (1980). Nature and treatment of articulation disorders. Springfield: Charles C Thomas.

Maxillofacial Anomalies

Unit 1:

- Berkowitz (Ed) (1996). Cleft lip and palate. San Diego: Singular Publishing Group.
- Brodsky & Others (1992). Craniofacial anomalies. St. Louis: Mosby.
- Bzoch, K. (Ed) (1989). Communicative disorders related to cleft lip and palate. Boston: Little Brown Co..
- Edwards (1980). Advances in the management of cleft palate. London: Churchill, Livingstone.
- Ellis & Reffack (Ed) (1979). Diagnosis and treatment of palatoglossal malfunction. London.
- Grabb, W.C. & Others (1971). Cleft lip & palate surgical, dental and speech aspects. Boston: Little Brown Co.
- Grunwell (Ed) (1993). Analysis of cleft palate speech. London: Whurr Publisher.
- McWilliams, B.J. (1990). Cleft palate speech. Philadelphia: B.C. Decker.
- Millard (1980). Cleft craft. the evaluation of its surgery. Boston: Little Brown Co.
- Morgan & Others (Ed) (1977). Diseases of the temporomandibular apparatus. Mosby: St. Louis.
- Morley (1970). 7th Ed. Cleft palate and speech. Edinburgh, Livingstone.
- Powers, G.R. (1986). Cleft palate. Austin: Pro.Ed
- Skelly (1974). Glossectomy: Speech rehabilitation. Springfield: Charles C Thomas
- Skolnick (1989). Videofluoroscopic studies of speech in patients with cleft palate. New York: Springer-Verlag.
- Spristersbach, D. (1968). Cleft palate and communication. New York: Academic Press.
- Stengloff, J. (Ed) (1993). Cleft palate; the nature of remediation of communication problems. London; Whurr Publishers.
- Wells, C. (1971). Cleft palate and its associated speech disorders. New York: McGraw Hill. ..
- Westlake & Rutherford, F. (1966). Cleft palate. Englewood: Prentice-Hall

OB 020: FLUENCY AND ITS DISORDERS

Common to all units

- Bloodstein, O. (1975). A handbook on stuttering. Chicago: National Easter Seal Society for Crippled Children and Adults.
- Bloodstein, O. (1993). Stuttering. Boston: Allyn and Bacon
- Couture (1990). Stuttering. New Jersey: Prentice Hall.
- Curlee (1993), Stuttering and related disorders of fluency. New York: Theme Medical Publisher
- Curlee & Perkins (Ed) (1985). Nature and treatment of stuttering. London: Taylor & Francis.
- Eisenson, J. (1975). Stuttering: A symposium. New York: Harper & Row
- Hahn, E.F & Hahn, E.S. (1973). Stuttering significant theories and therapies. 2nd Ed. California: Stanford University Press.
- Myers, Louis, Ko (1992). Cluttering. Kobworth: Far Communication.
- Silverman, F.H (1992). Stuttering and other fluency disorders. Englewood Cliffs: Prentice Hall
- Starkweather, D. (1987). Fluency and stuttering. New Jersey: Prentice-Hall.
- Van Riper, C. (1973). Treatment of stuttering. New Jersey: Prentice Hall

Van Riper, C. (1982). Nature of stuttering. 2nd Ed. New Jersey: Prentice Hall Inc.
 Wells (1987). Stuttering treatment-A. C. New Jersey: Prentice-Hall.
 Weiss (1964). Cluttering. New Jersey: Prentice Hall.
 Wingate, M.E. (1976). Stuttering theory and treatment: New York: Irvington.

Unit 1:

Johnson, W. & Leytenegger, R.B. (1963). Stuttering in children and adults. Thirty years of research at the University of IOWA. Minneapolis: University of Minnesota.

Unit 2:

Dalton, PhardcastJe, W.J. (1993). Disorders of fluency. London: Whurr Publishers
 Fawcus, M. (1995). Stuttering. London: Whurr Publishers
 St, Louis (1986). Atypical stutter. Orlando: Academic Press

Unit 3:

Barbara, D.A. (1965). New directions in stuttering theory and practice. Springfield: Charles C Thomas.
 Darton, PhardcastJe, W.J. (1993). Disorders of fluency. London: Whurr Publishers
 Fawcus, M. (1995). Stuttering. London: Whurr Publishers
 Gregory, H. (1986). Stuttering: Differential evaluation and therapy. Autism: Pro. Ed.
 Perkins, W.L (1992). Stuttering prevented. London: Whurr Publishers
 Riey (1981). Stuttering prediction instrument for young children. Austin: Pro. Ed.
 Riley (1986). Stuttering severity instrument for children and adults. Austin: Pro. Ed
 Rustin, L. & Others (1996). Assessment and therapy for young dysfluent children. London: Whurr Publishers
 St. Louis (1986). Atypical stuttering. Orlando: Academic Press.
 Wall & Nters (1995). Clinical management of childhood stuttering. II Ed. Autism: Pro, Ed.

Unit 4:

Austin, L. & Others (Ed) (1991). Progress in the treatment of fluency disorders. London: Whurr Publishers
 Corder & Akingham, R.J. (1998). Treatment efficacy for stuttering. San Diego: Singular Publishing Group.
 Dalton & PhardcastJe! W.J. (1993). Disorders of fluency. London: Whurr Publishers
 Gregory, H (1986). Stuttering: Differential evaluation and therapy. Autism: Pro. Ed
 Mark Onslow (1996). Behavioral management of stuttering. Singular Publishing Group Inc.
 Richard Ham (1986). Technique of stuttering therapy. New Jersey: Prentice Hall.
 Riley (1981). Stuttering prediction instrument for young children. Austin: Pro. Ed

Unit 5:

Austin, L. & others (Ed) (1991). Progress in the treatment of fluency disorders. London: Whurr Publishers

Corder, Akingham, R.J. (1998). Treatment efficacy for stuttering. San Diego: Singular Publishing Group.

OB 030: NORMAL AND ABNORMAL ASPECTS OF VOICE AND LARYNGECTOMYVOICE

Common to all units

Aronson, A;E. (1990). Clinical voice disorders. New York: ThiemeInc;

Aronson, A.E. (1980). Clinical voice disorders: An interdisciplinary approach. New York: Thieme Stratton

Boone, O.(1977). Voice and voice therapy.2nd Ed. New Jersey: Prentice Hall Inc.

Boone, D.R. & McFarlane, S.t (1994).The voice and voice therapy.5th Ed. Englewood Cliffs, New Jersey: Prentice-Hall.

Case, JL (1991).Clinical management of voice disorders. Austin: Pro.Ed.

Fawcus, m. (Ed) (1991).Voice disorders and their management. San Diego: Singular Publishers Group

Greene. M.C.L. & Mathieson, L. (1989). The voice and its disorders. London: Whurr Publishers

Lushinger& Arnold (1967).Voice and speech, language. California: Woodsworth.

Moore, G.P. (1971). Organic voice disorders. New Jersey: Prentice Hall.

Prater, R.J. & Swift R.W, (1984).Manual of voice therapy. Boston: Little Brown Co.

Van Riper, C & Irwin, J. V. (1968).Voice and articulation. New York: Prentice Hal/Inc.

Unit 1:

Daniloff, R. &Schuckers, G (1980). The physiology of speech and hearing: An introduction. New York:Prentice Hall

Hirano, M, (1981), Clinical examination of voice, New York: Springer-Verlag

Judson, L.S.V. & Weaver, A.T. (1996).Voice Science. London: Vision Press Limited.

Unit 2:

Brown W.M.S. & Others (Ed) (1996). Organic voice disorders San Diego: Singular Publishing Group.

Moore, G.P. (1971). Organic voice disorders. New Jersey: Prentice Hall.

Unit3:

Andrews, M.L. (1995). Manual of voice treatment. San Diego: Singular Publishing Group.

Andrews, L.M. & Summers, A.C. (1987).Voice therapy for adolescent. San Diego: Singular Publishing Group

- Brown, O.L. (1996). Discover your voice. San Diego: Singular Publishing Group
- Brown W.M.S. & Others (Ed) (1996). Organic voice disorders. San Diego: Singular Publishing Group.
- Dmrkin, J.P. &Meleca, R.J. (1997). Vocal pathologies: Diagnosis treatment and case study. San Diego: Singular Publishing Group.
- Joseph, C, StmpleLeble, E Glaze, Bemick K Gerdeman. 2nd Ed. Clinical voice pathology Theory and management.
- Koschkee, D.L. &Rammage, L. (1997). Voice care in the medical setting. San Diego: Singular Publishing Group.
- Lushliger& Arnold (1967).Voice and speech, language. California: Woodsmrth Moore, G.P. (1971). Organic voice disorders. New Jersey: Prentice Hall.
- Morrison, M. &Rammage, L (1994).The management of voice disorders. San Diego: Singular Publishing Group.
- Pindzola, R.H. (1987). Voice assessment protocol for children and adults manual. Austin: Pro.Ed.
- Prater, R.J. &SYiift, R.W. (1984).Manual of voice therapy. Boston: Little Brown Co.
- Stemple, J.C (1993). Voice therapy. St. Louis: Mosby Year Book.
- Wilson, D.K. (1979). Voice problems of children. 2nd Ed. Baltimore: Williams & Wilkins

Unit 4:

- Andrews, M.L. (1995). Manual of voice treatment. San Diego: Singular Publishing Group.
- Andrews, L.M. & Summers, A.C. (1987).Voice therapy for adolescents. San Diego: Singular Publishing Group.
- Brown, W.M.S & Others (Ed) (1996).Organic voice disorders. San Diego: Singular Publishing Group.
- Cooper, M. (1977). Modem techniques of vocal rehabilitation. Springfield: Charles Thomas.
- Dmrkin, J.P. &Meleca, R.J. (1997).Vocal pathologies, diagnosis treatment and case studies. San Diego: Singular Publishing Group.
- Joseph, C StempleLeble, E Glaze, Bernick K Gerdeman. Clinical voice pathology: Theory and management. 2nd Edn.
- Prater, R.J. &SYiift, R.W. (1984).Manual of voice therapy. Boston: Little Brown & Co.
- Stemple, J.C. (1993). Voice therapy. St. Louis: Mosby Yearbook.
- Wilson, O.K. (1979). Voice problems of children. 2nd Ed. Baltimore: Williams & Wilkins.

Unit 5:

- Brown, O.L. (1996). Discover your voice. San Diego: Singular Publishing Group.
- Brown, W.M.S & others (Ed) (1996)., Organic voice disorders. San Diego: Singular Publishing Group.
- Prater, R.J. &SYiift, R.W (1984).Manual of voice therapy. Boston: Little Brown & Co.
- Sataloft, R. T (1991).Professional voice. New York: Raveen Press.
- Stemple, J.C. (1993). Voice therapy.St.Louis: Mosby Year Book.

Laryngectomy:

- Diedrich, W.M. & Youngstrom, K.A. (1966). A laryngeal speech. Springfield: Charles C Thomas
- Doyle, P.C. (1994). Foundation of voice and speech rehabilitation following laryngeal cancer, San Diego: Singular Publishing Group.
- Green, M.C.L. (1980). Voice and its disorders. 4th Ed. Kent: Pitman Medical Limited,
- Keith, R.L. & Darley. Laryngectomy rehabilitation. III Ed. Austin: Pro. Ed.
- Luchsinger, R. & Arnold, G.E. (1965). Voice-speech-language clinical communicology: Its physiology and pathology. California: Woodsworths.
- Prater, R.J. & Siefert, R.W. (1984). Manual of voice therapy. Boston: Little Brown and Co.
- Salmon, S.J. & Mount, K.H. (Ed) (1991). A laryngeal speech rehabilitation. Austin: Pro. Ed.
- Snidecor, J.C. (1968). Speech rehabilitation of the laryngectomised. 2nd Ed. Springfield: Charles C Thomas
- Travis, L.E. (Ed) (1971). Handbook of speech pathology and audiology. New Jersey; Prentice Hall Inc.
- Van Riper, C. & Irwin, J.V. (1958). Voice and articulation. New Jersey: Prentice Hall Inc.
- Yvonne, E. (Ed) (1983). Laryngectomy, Diagnosis to rehabilitation. London: Croom Helm Ltd.

OB 040: DIAGNOSTICS AUDIOLOGY

DIAGNOSTICS AUDIOLOGY: BEHAVIOURAL TESTS

Common to all units

- Hall, J. W. & Mueller, H.G. (1997). Audiologists' desk reference volume 1: Diagnostic audiology principles: Procedures and protocols. San Diego: Singular Publishing Group. -
- Jerger, S. & Jerger, J. (1981). Audiological disorders: A manual for clinical evaluation. Boston: Little Brown Co.
- Katz, J. (1978). Handbook of clinical audiology. Baltimore: Williams & Wilkins.
- Katz, J. (Ed) (1985). Handbook of clinical audiology. Baltimore: Williams & Wilkins.
- Katz, J. (Ed) (1994). Handbook of clinical audiology. Baltimore: Williams & Wilkins.
- RintJeman, W.F. (1991). Hearing assessment. Boston: Allyn & Bacon.
- Roser, R.R., Valente, M & Hosford-Dunn, D (Eds). Audiological diagnosis. New York: Thieme.
- Silman, S. & Silverman, C.A. (1991). Auditory diagnosis: Principles and applications. New York: Academic Press.

Unit 2:

- Alford, B.R. & Jerger, S. (Ed) (1993). Clinical audiology: The Jerger perspective. San Diego: Singular Publishing Group Inc.
- Arlinger, S. (Ed) (1994). Manual of practical audiometry. Volume 1. Delhi: AITBS.
- Arlinger, S. (Ed) (1995). Manual of practical audiometry. Volume 2. Delhi: AITBS.

Martin, F.N. (1994). Introduction to audiology. New Jersey: Prentice Hall.

Unit 3:

Martin, F.N. (1994). Introduction to audiology. New Jersey: Prentice Hall

Unit 4&5:

Bellis, T.J. (1996). Assessment and management of central auditory processing disorders in educational setting: From science to practice. San Diego: Singular Publishing Group Inc.

Chermak, G.D. & Musiek, F.E. (1997). Central auditory-processing disorders: New perspectives. San Diego: Singular Publishing Group Inc.

Willeford, J.A. (1987). Handbook of central auditory processing disorder in children. Orlando: Grune and Stratton

DIAGNOSTIC AUDIOLOGY; PHYSIOLOGICAL TESTS

Common to all units

Hall, J. W. & Mueller, H.G (1997). Audiologists' desk reference volume 1: Diagnostic audiology principles, procedures and protocols. San Diego: Singular Publishing Group.

Katz, J. (Ed) (1994). Handbook of clinical audiology. Baltimore: Williams & Wilkins.

Rintleman, W.F. (1991). Hearing assessment. Boston: Allyn and Bacon.

Silman, S. & Silverman, C.A. (1991). Auditory diagnosis: Principles and Applications. New York: Academic Press

Roser, R.R., Valente, M. & Hosford-Dunn, D. (Eds). Audiological diagnosis. New York: Thieme

Unit 1:

Brodford, F.J. (Ed) (1975). Physiological measures of the audio-vestibular system. New York: Academic Press.

Feldman, A.S. & Willber, L.A (Eds) (1976). Acoustic impedance admittance: Measurement of middle ear function. Baltimore: Williams & Wilkins.

Popelka, G.R (Ed) (1981): Hearing assessment with acoustic reflex. New York: Grune & Stratton.

Wilev, T.L. & Fowler, C.G. (1997). Acoustic immittance measures in clinical audiology: A primer. San Diego: Singular Publishing Group.

Unit 2:

Ferraro, J.A. (1997). Laboratory exercises in auditory evoked potentials. San Diego: Singular Publishing Co.

Hall, J.W. (1992). Handbook of auditory evoked responses. Massachusetts: Allyn & Bacon.

- Hood, L.J. (Ed) (1994). Clinical applications of auditory evoked potentials. San Diego: Singular Publishing Group.
- Jacobson, J.T. (Ed) (1994). Auditory brainstem response. London: Taylor & Francis.
- Jerger, S. & Jerger, J. (1981). Audiological disorders: A manual for clinical evaluation. Boston: Little Brown & Co.
- Keith, R.W. (1972). Audiology for the physician. Baltimore: Williams & Wilkins.
- Owen, J.H. & Donhoe, C.W. (Ed) (1988). Clinical atlas of auditory evoked potentials. Orlando: Grune and Stratton.

Unit 3:

- Ferraro, J.A. (1997). Laboratory exercises in auditory evoked potentials. San Diego: Singular Publishing Co.
- Hall, J.W. (1992). Handbook of auditory evoked responses. Massachusetts: Allyn & Bacon.
- Jacobson, J.T. (Ed) (1994). Auditory brainstem response. London: Taylor & Francis.

Unit 4:

- Robinette, M.S. & Glatke, T.J. (Eds) (1997). Otoacoustic emissions: Clinical application. New York: Thieme.

OB 050: EDUCATIONAL AUDIOLOGY

Common to all units

- Davis, J.M. & Hardick, E.J. (1981). Rehabilitative audiology for children and adults. New York: John Wiley & Sons.
- Lynas, W. (2000). Communication options. In J. Stokes (Ed). Hearing impaired infants - Support in the first eighteen months. London: Whurr Publishers Ltd.
- Ross, M., Brackett, D. & Maxon, A.B. (1991). Assessment and management of mainstreamed hearing-impaired children: Principles and practice. Austin: Pro. Ed.
- Sanders, D.A. (1993). Management of hearing handicap: Infants to elderly. 3rd Ed. New Jersey: Prentice Hall.
- Sims, L.G., Walter, G.G. & Whitehead, R.L. (1981). Deafness and communication: Assessment and training. Baltimore: Williams and Wilkins.
- Tucker, I & Nolan, M. (1984). Educational audiology. Chapter 10. London: Croom Helm.

Unit 1:

- Alpiner, J.G. (1982). Handbook of adult rehabilitative audiology. Baltimore: Williams & Wilkins.
- Chermak, G.D. (1981). Handbook of audiological rehabilitation. C.C. Thomas
- Ebbin, J.B. (1974). Critical age inhering, In C. Griffiths (Ed). Proceeding of the International Conference on Auditory Techniques. Illinois: Charles C Thomas.

Griffiths, C. (1974): Early identification -plus the auditory approach. In C Griffiths (Ed).Proceeding of the International Conference on Auditory Techniques. Illinois: Charles C Thomas. 11

Unit 2:

Borastein, H. (1977), Systems of sign. In L.J. Bradford & W.G. Hardy (Eds). Hearing and hearing impairment New York: Grune and Stratton Inc.
Hull, R.H, (Ed) (1982). Rehabilitative Audiology. New York: Grune and Stratton Inc.

Unit 3:

Fitzgerald, E. (1929), Straight language for the deaf. McClure.
Jackson, A. (1981). Ways and means-3. Hearing impairment a resource book of information, technical aids, teaching material and methods used in the education of hearing impaired children. Hong Kong: Somerset Education Authority.
Tebbs, T. (1978). Ways and means: A resource book of aids, methods, materials, materials and systems for use with the language retarded child. Hong Kong: Somerset Education Authority.

Unit 4&5:

Correspondence program for Parents of the Deaf, John Tracy Clinic.
Nix, G.W. (1976). Mainstream education for hearing impaired children and youth, New York: Grune and Stratton Inc.
Ross, M., Brackett, D. &Maxon, A.B. (1991). Assessment and management of mainstreamed hearing impairment children: Principles and practice. Austin: Pro. Ed.
Webster, A, & Ellwood, J, (1985). The hearing impaired child in the ordinary school. London: Croom Helm.

REHABILITATIVE AUDIOLOGY

Unit 1:

Bellis, T .J. (1996). Assessment and management of central auditory processing disorders in educational setting: From Science to practice. San Diego: Singular Publishing Co.
Plant,G. &Spens, K,E.(1995). Profound deafness &speech;communication. London: Whurr Publishers Ltd.
Trehur; S.E. &Shneider, B. (Ed) (1985).Auditory development in infancy. New York: Plenum Press.
Walsh, S.R. &Holzberg, R. (1981). Understanding and educating the deaf-blind severely and profoundly handicapped -An international perspective. Springfield: Charles C Thomas Publishers.

Unit 2&3:

- Balkany, I. (1986). Cochlear implant..The otolaryngologic clinics in North America.
- Berger, K.W. (1972). Speech reading: Principles and Methods. National Educational Press.
- Nielsen, H.B. & Kampp.E. (1974). Visual and audio-visual perception of speech. Denmark: Sixth Danavox Symposium.
- O'Neill, J.J. & Oyer, H.J. (1961). Visual communication for the hard of hearing. New Jersey: Prentice Hall.
- Plant, G. & Spens, K.E..(1995). Profound deafness & speech communication. London: Whurr Publishers Ltd.
- Sanders, D.A. (1993). Management of hearing handicap infants to elderly. 3rd Ed. New Jersey: Prentice Hall.

Unit 4&5:

- Erber, N.P. (1982). Auditory training. Washington: A.G. Bell Association for the Deaf.
- Flexer, C. (1994). Facilitating hearing and listening in young children. California: Singular Publishing Inc.
- Griffiths, C. (1974). Proceedings of the international conference on auditory technique. Illinois: Charles C Thomas.
- Oyer, H.J. (1966). Auditory communication for the hard of hearing. New Jersey: Prentice Hall.

OB 060: OTOLARYNGOLOGY

- Ballantyne, J.C. (1978). Synopsis of Otolaryngology. Varghese Publications: Bombay.
- Mawson, S.R. (1963). Diseases of ear. Arnold Publications: London.
- Simpson, J.F. (1967). Synopsis of Otolaryngology. 2nd Ed. John Wright, Briston.

OB 070: STATISTICS AND RESEARCH METHODS AND EPIDEMIOLOGY RELATED TO SPEECH AND HEARING

- Garrett, H.E & Woodworih, R.S. (1967). Statistics in psychology and education. 41h Ed. Bombay: Ferrer & Simons.
- Hegde, M.N. (1987). Cjinal research in communication disorders. Boslon: College-Hill Press.
- Richard, P.R. & Audrey, H. (1967). Fundamentals of behavioral statistics. Massachussetts: Addison-Wesley Publishers.

OC 010: MOTOR SPEECH DISORDERS AND DYSPHAGIA MOTOR SPEECH DISORDERS IN CHILDREN

Unit 1:

- Chusid, J.G. (Ed) (1975). Correlative neuro-anatomy and functional neurology. Hunstmen Offset Pvt.
- Espir, M. & Rose, F .C.(1983). The basic neurology of speech and language. Oxford: Blackwell Scientific.
- Ghai, C.L. (1996). Textbook of human neurophysiology. Delhi: AITBS.
- Love, R.J. & Webb, W,G.(1992). Neurology for the speech, language pathologist. Boston: Butterworth- Heinnemann.
- Palmer, J.W. & Laruss, D.A. (1984). Anatomy for speech and hearing. New York: Harper & Row.
- Romanes, G.J. (1979). Cunningham's manual of practical anatomy..Vol.3, Head, Neck and Brain. Oxford: Oxford University Press.

Unit 2:

- Brookshire, R.H. (1992). An introduction to neurogenic speech disorders. St. Louis: Mosby Year Book.
- Crary, M.A. (1993). Developmental motor speech disorders. San Dieg9, California: Singular Publishing Group Inc, Whurr Publishers.
- Darby, J.K (Ed) (1985). Speech and language evaluation in neurology: Childhood disorders. Orlando: Grune & Stratton.
- Denhoff, E & Robinault, I.(1960). Cerebral palsy and related disorders: A developmental approach to dysfunction. New York: McGraw-Hili.
- Dodd, B. (Ed) (1995). Differential diagnosis and treatment of children with speech disorders. England: Whurr publishers Ltd.
- Dworkin, J.P (1991). Motor speech disorders: A treatment guide. St. Louis: Mosby Year Book
- Hardy, J.C; Langley, B & Lombardino, L.J. (Ed) (1991). Neurodevelopmental strategies for managing communication disorders in children with severe motor dysfunction.
- Murdoch, B.E (1990). Acquired speech and language disorders: A neuroanatomical and functional neurological approach. London: Chapman & Hall.
- Scherzer, A.L & Tschamuter, I. (1982). Early diagnosis and therapy in cerebral palsy: Primer on infant developmental problems. New York: Marcel Dekker Inc.
- Thompson, G,H. et al. (1983). Comprehensive management of cerebral palsy, New York: Grune & Stratton.

Unit 3:

- Dworkin, J.P. (1991). Motor speech disorders: A treatment guide. St.Louis: Mosby Year Book

Edward, M. (1984). Disorders of articulation: Aspects of dysarthria and verbal dyspraxia. New York: Singer Verlag.

Hall, P.K Jordon & Robin (1993). Developmental apraxia of speech: Theory and clinical practice. Austin: Pro.Ed.

Unit 4:

Adler, S. et al. (1980). Interdisciplinary language intervention program for the moderately to profound language retarded child, New York: Grune & Stratton.

Ashman, A.F. & Laurta, R.S. (Ed) (1985), The education and training of the mentally retarded: Recent advances. New York: Nichols Publishing Co.

Cooper, B (Ed) (1981). Assessing the handicaps and needs of mentally retarded children. Academic Press Inc.

Craft, W (Ed) (1979). Tredgolds mental retardation. USA: Cavell Ltd.

Rondal, J.A., Perara, J, Nadel, L. & Comblain, A' (1996). Down's syndrome - psychological, psychobiological & socio-educational perspectives. London: Whurr Publishers Ltd.

Unit 5:

Beukelman, Yorkston & Dowden (1994). Communication augmentation: A case book of clinical management. San Diego: College Hill Press.

Blackstone and Bruskin (1986). Augmentative communication: An introduction. ASHA Publication.

Enderby, P. (Ed) (1987). Assistive communication aids for the speech impaired. New York: Churchill Livingstone Inc.

Glennen & Decoste, D.C (1997). Handbook of augmentative and alternative communication. San Diego, London: Singular Publishing Group Inc.

Musselwhite & Louis (1988). Communicative programming for persons with severe handicaps - Vocal and augmentative strategies. Texas: Pro. Ed.

SilveRman, F.H (1980). Communication for the speechless. London: Prentice Hall Inc.

VanerHelden, G & Grilley, K (Ed) (1978). Non-vocal communication techniques and aids for the severely physically handicapped. New York: University Park Press.

Webster (Ed) (1990). Electronic devices for the communication handicapped. San Diego: College Hill Press.

MOTOR SPEECH DISORDERS IN ADULTS

Common to all units

McNe;ilrMet at (Ed) (984). The dysarthrias. San Diego: College Hill Press

Dworkin, J.P {1991). Motor speech disorders: A treatment guide. St. Louis: Mosby Year Book

Unit 1:

- Berry, W.R (1983). Clinical dysarthria. San Diego: College Hill Press
- Bick&rstaff, E.R & Spillane, J.A (1989).Neurological examination in clinical practice. Bombay: Oxford University Press.
- Darby, J;K (Ed) (1981). Speech evaluation in psychiatry. New York: Grune & Stratton. .
- Edward, M (1984). Disorders of articulation: Aspects, of dysarthria and verbal dyspraxia. New York: Springer Verlag. .
- Kuehn, D.P., Lemme & Baumgartner (Ed) (1989).Neural basis of speech, hearing and language. Boston: College Hill Press.
- Love, R.J & Webb, W.G (1992).Neurology for the speech, language pathologist. Boston: Butterworth- Heinemann.
- Murdoch, B.E (1990). Acquired speech and language disorders: A neuroanatomical and functional neurological approach. London: Chapman & Hall.
- Netsell, R (1986). A neurologic view of speech production and the dysarthrias. San Diego: College Hill Press.

Unit 2:

- Johns, E (Ed) (1989). Clinical management of neurogenic communication disorders. London: Mosby Book Publishers
- Kent, R.D (1994). Reference manual for communicative sciences and disorders: Speech and language.
- McNeil, M., Rosenbek & Aronson (Ed) (1984). The dysarthrias: Physiology, acoustic, perception and management. San Diego: College Hill Press.
- Murdoch, B.E (1990). Acquired speech and language disorders: A neuroanatomical and functional neurological approach. London; Chapman & Hall.
- McNeil (Ed) (.1997). Clinical management of sensorimotor speech disorder. New York: Thieme Publishers.
- Netsell, R (1986). A neurobiologic view of speech production and the dysarthrias. San Diego: College Hill Press.

Unit 3:

- Murdoch, B.E (1990). Acquired speech and language disorders: A neuroanatomical and functional neurological approach. London: Chapman & Hall.
- Netsell, R (1986). A neurobiologic view of speech production and the dysarthrias. San Diego: College Hill Press.
- Yorkston, Beukelman & Bell (1995). Clinical management of dysarthric speakers. .

Unit 4:

- Edward, M (1984). Disorders of articulation: Aspects of dysarthria and verbal dyspraxia. New York: Springer Verlag.
- Johns, E (Ed) (1989). Clinical management of neurogenic communication disorders. London: Bosby Book Publishers.

Wertz Lapointe&Rosenbek (1988).Apraxia of speech in adults. New York: Springer Verlag.

Unit 5:

Beukelman, Yorkston& Dowden (1994). Communication augmentation: A casebook of clinical management. San Diego: College Hill Press.

Blackstone &Bruskin (1986). Augmentative communication: An introduction, ASHA Publication.

Enderby, P (Ed) Assistive communication aids for the speech impaired. New York: Churchill Livingstone Inc.

Glenen&Decoste, D.C (1997). Handbook of augmentative and alternative communication. London: Singular Publishing Group Inc

Musselwhite& Louis (1988). Communicative programming for persons with severe handicaps: Vocal& augmentative strategies. Texas: Pro.ed.

Silverman, F.H (1980). Communication for the speechless. London: Prentice Hall.

Vander Heiden, G &Grilley, K (Ed) (1978). Non-vocal communication techniques and aids for the severely physically handicapped. New York: University Park Press.

Webser (Ed) (1990). Electronic devices for the communication handicapped. San Diego: College Hill Press.

DYSPHAGIA

Bruce E Murdoch, Deborah G Theodoros, 2001, Traumatic Brain Injury: Associated Speech Language and Swallowing Disorders, Singular Publishers.

Michael E Groher, 1992, Dysphagia: Diagnosis and Management, 2nd Edition, Butterworth – Heinemann, USA.

Kim Coxbin – Lewis, Julie M Liss, Kellie L, Sciortino 2005, Clinical Anatomy and Physiology of the swallow mechanism, Thomson Delmar Learning, USA.

OC 020: CHILD LANGUAGE DISORDERS

Unit 1:

Nelson, N. W (1998). Childhood language disorders in context: Infancy through adolescence. 2nd Ed. USA: Allyn& Bacon Inc.

Unit 2:

Espir, R & Rose, L (Ed) (1983). The basic neurology of speech and language. Oxford: Blackwell Scientific Pub.

Cohen, N.M. et al. (1973), Monographs in neural sciences. Vol.1, Paris: Karger Pub.

Kuehn, M. et al. (1989). Neural bases of speech, hearing and language. New York: College Hill Park..

Miller, J.L & Eimas, P.D (1995). Speech, language and communication. New York: Academic Press.

Unit 3:

Peeters, T (1997). Autism-from theoretical understanding to educational intervention. San Diego: Singular Publishing Group Inc.

Rondal, S & Edwards, L (1997). Language in mental retardation. London: Singular Pub. Inc.

Burack, et al. (Ed) (199B). Handbook of mental retardation and development. London: Cambridge Univ.

Byers, B. & Edwards A (1989). Developmental disorders of language. California: Singular Pub. Co.

Gilliam, J.E (Ed) (1981). Autism:-Diagnosis, instruction, management and research.

Hulme, L & Snowling, M (1994). Reading development and dyslexia. London: Whurr Pub.

Jakob, I (Ed) (1982). Mental retardation. London: Karger Pub.

Unit 4:

Berry, M.F (1969). Language disorders in children: The bases & diagnosis. New York : Appleton Century Crofts Bloom & Lahety, M (1978). Language development and language disorders. John Wiley & Sons Inc.

Crystal, D., Fletcher, P. & Garman, M (1976). The grammatical analysis of language disability. London: Edward Arnold.

Crystal, D (1982). Profiling linguistic disability. London: Edward Arnold

Fillmore, C. & Wang, W (Eds) (1982). Individual differences in language ability and language behavior. New York: Academic Press.

Gallagher, T.M (1991). Programmatic of language: Clinical practice issues. California: Singular Pub. Co.

Holland, AL (Ed) (1984). Language disorders in children: Recent advances. California: College Hill Press.

Johns, D.F (1978). Clinical management of neurogenic communicative disorders. Boston: little Brown & Co.

Unit 5:

Fay et al. (1995). Language intervention: Preschool through elementary years communication and language intervention series. Vol:5, USA: Brookes Pub Co.

Lovaas, O (1977). The autistic child: Language development through behavior modification approaches. San Diego: Singular Pub Co.

Nelson, N.W (1998). Childhood language disorders in context: Infancy through adolescence. 2nd Ed. USA: Allyn & Bacon.

Rass, P & Swain, G (1992). Cognitive and linguistic improvement program. San Diego: Singular Pub Co.

OC 030: APHASIA AND OTHER LANGUAGE DISORDERS

Unit 1:

- Arbib, M.A., Caplan, O & Marshall, J.C (Ed) (1982). Neural models of language processes. New York: Academic Press.
- Dworkin, J & Hartman, D.E (Ed) (1994). Cases in neurogenic communicative disorders: A workbook. San Diego: Singular Publishing Group Inc.
- Jenkins, L (2000). Bilingualism-Exploring the biology of language. Cambridge: University Press.
- Kirk, U (Ed) (1983). Neuropsychology of language, reading and spelling. NY: Academic Press
- Kuehn, Met al. (Ed) (1989). Neural bases of speech, hearing and language. Boston: College Hill Press
- Levinson, P.J & Sloan, C(1980). Auditory processing and language-clinical and research perspectives: NY: Grune & Stratton.
- Maruszewski, M (1975). Language, communication and the brain: A neuropsychological study. Paris, Mouton: The Hague .
- Miller, J.L & Eimas, P.D (Ed) (1995). Speech language and communication. New York: Academic Press

Unit 2:

- Lecours et al. (1983). Aphasiology. London: Tindall.
- Lesser, L (Ed) (1989). Linguistic investigations of aphasia. London: Cole & Whurr Ltd.
- Sarno, M. T (Ed) (1971). Acquired aphasia. New York: Academic Press

Unit 3:

- Albert, M.L (1981). Clinical aspects of dysphasia. New York: Springer-Verlag.
- Davis, A (1983). A survey of adult aphasia. New Jersey: Prentice Hall
- Hegde, M.N (1986). A course book on aphasia. San Diego: Singular Publishing Group Inc.
- Rose, E (Ed) (1993). Aphasia. London: Whurr Publishers

Unit 4:

- Alber, M.L & abler, L.K (1978). The bilingual brain-neuropsychological and neurolinguistic aspects of bilingualism: Perspectives in neurolinguistics and psycholinguistics series. New York: Academic Press.
- Caplan, O (1990). Neurolinguistics and linguistic aphasiology. London: Cambridge Univ. Press.
- Lertesz (1979). Aphasia and associated disorders: Anatomy, localization and recovery. New York: Grune & Stratton.

Unit 5:

- Coe & Muller (1989). Aphasia therapy: Studies in disorders of communication. London: Whurr Pub.
- LaPointe, L (1990). Aphasia and related neurogenic language disorders: Current therapy of communication disorders Series editor Perkins, New York: Thieme Pub
- Johns, D.F(Ed) (1978), Clinical management of communication disorders. Boston: Little Brown & Co.

OC 040: HEARING AIDS

Common to all units

- Hodgson, W.R & Skinner, P.H (1977, 1981). Hearing aid assessment and use in audiologic habilitation. Baltimore: Williams & Wilkins.
- Katz, J (1978,1985,1994). Handbook of clinical audiology.2nd, 3rd and 4th Edn. Baltimore: Williams & Wilkins
- Pollack, M.C (1980). Amplification for the hearing impaired. NY: Grune& Stratton.
- Valente, M., Dunn, H.H &Roeser.R.J (2000).Audiology-treatment. NY: Thieme.

Unit 1:

- Donnelly, K (1974). Interpreting hearing aid technology. Springfield: C.C Thomas

Unit 2:

- Bess, F.H et al. (1981). Amplification in education. Washington: Alexander Graham Bell Association for the Deaf.
- Markides, A (1977). Binaural hearing aids. London: Academic Press Inc.
- Sanders, D.A (1993). Management of the hearing handicapped: From infants to elderly. 3rd Edn. Englewood Cliffs: Prentice Hall Inc.
- Skinner, M.W (1988). Hearing aid evaluation. NJ: Prentice Hall
- Stuebaker, G.A & Hochberg, I (1993). Acoustical factors affecting hearing aid performance. 2nd Ed. MA.: Allyn& Bacon.
- Valente, M (1996). Hearing aids: Standards and options. NY: Thieme Medical Publishers Inc

Unit 3:

- Hull, R.H (1982). Rehabilitative audiology. NY: Grune& Stratton
- Levitt, H., Pickett, J.M & Houde, R.A (1980). Sensory aids. NY: John Wiley, Inc.

Unit 4:

- Lovenbruck, A.M & Madell, I.R (1981). Hearing aid dispensing for audiologists: A guide for clinical service. NY: Grune& Stratton.

Unit 5:

- Sanders, DA (1993). Management of the hearing handicapped: From infants to elderly. 3rd Edn." NJ, Englewood Cliffs: Prentice Hall Inc.
- Schweitzer, H.C (1986). Time -The 3rd dimension of hearing aid performance. Hearing Instruments, 37(1), 17
- Studebaker, GA & Hochberg, I (1993). Acoustical factors affecting hearing aid performance. 2nd Ed. MA.: Allyn& Bacon.
- Valente, M (1996). Hearing aids: Standards and options. NY: Thieme Medical Publishers Inc.

REHABILITATIVE TECHNOLOGY FOR HEARING IMPAIRED

Common to all units

- Katz, J (1978,1985,1994.). Handbook of clinical audiology. 2nd, 3rd & 4th Ed. Baltimore: Williams & Wilkins.
- Valente, M., Dunn, H.H & Roser, R.J (2000). Audiology: Treatment. NY: Thieme.

Unit 1:

- Sandlin, R.E (1994). Understanding digital programmable hearing aids. Boston: Allyn& Bacon.
- Studebaker, G.A & Hochberg, I (1993). Acoustical factors affecting hearing aid performance II Edn. MA: Allyn& Bacon.
- Volanthen, A(1995). Hearing instrument for the hearing health care professional: NY: Thieme.

Unit 2:

- Bess, F.H et al. (1981). Amplification in education. Washington: Alexander Graham Bell Association for the Deaf.
- Hull, R.H. (1982). Rehabilitative audiology. NY: Grune& Stratton,
- Mueller, H.G., Hawkins,D.B&Northe, J.L (1992). Probe microphone measurements: Hearing aid selection and assessment. California: Singular Publishing Group Inc.
- Sanders, D.A (1993). Management of the hearing handicapped: From infants to elderly. III Ed. Prentice Hall Inc
- Valente, M (1994). Strategies for selecting and verifying hearing and fittings. NY: Thieme.

Unit 3:

- Berlin, I.C (1996). Hair cells and hearing ids. California: Singular Publishing Group Inc.
- Hodgson, W.R & Skinner, P.H (1977, 1981). Hearing aid assessment and use in audiologic habilitation. Baltimore: Williams and Wilkins.

- Maurer, J.F & Rupp, R.R (1979). Hearing and aging: Tactics for intervention. NY: Grune & Stratton.
- Mueller, H.G., Hawkins, D.G. & Northern, J.L (1992). Probe microphone measurements: Hearing aid selection and assessment. California: Singular Publishing Group Inc.
- Pollack, M.C (1980). Amplification for the hearing impaired. NY: Grune & Stratton
- Studebaker, G.A & Hochberg, I ('93). Acoustical factors affecting hearing aid performance. II Ed. MA: Allyn & Bacon.

Unit 4:

- Cooper, H (1991). Cochlear implants: A practical guide. London: Whurr Publishers.
- Niparko, J.K., Kirk, K.I., Mellon, N.K., Robbins, .A..M., Tucci, (D.L. & Wilson, B.S (2000). Cochlear implants: Principles and practices. Philadelphia: Lippincott Williams & Wilkins.
- Owens, E. & Kessler, D.K (1989). Cochlear implants in young def children. Boston: College Hill publication.
- Tyler, R.S (1995). Cochlear implants: Audiological foundations. New Delhi: AITBS Publishers
- Valente, M., Dunn, H.H & Roeser, R.J (2000). Audiology: Treatment. NY: Thieme
- Waltzman, S.B & Cohen, N.L (2000). Cochlear implants. NY: Thieme.

Unit 5:

- Armbruster, J.M & Miller, M.H (1981). How to get the most out of your hearing aid. Association for the Deaf. Baltimore: Williams & Wilkins.
- Bess, F.H. et al. (1981). Amplification in education. Washington: Alexander Graham Bell.
- Clark, J.G & Martin, F.N (1994). Effective counseling in audiology: Perspectives and practice.
- Gawinski, M.J (1991). Transducer damage: A practical guide to prevention. Hearing Journal, Grune & Stratton.
- Loavenbruck, A.M & Madell, I.R (1981). Hearing aid dispensing for audiologists.
- Maurer, J.F & Rupp, R.R (1979). Hearing and ageing: Tactics for intervention. NY.
- Pollack, M.C (1980). Amplification for the hearing impaired. NY: Grune & Stratton.
- Teder, H (1992). Reduction of high frequency gain can help solve feedback problems. Hearing.
- Tyler, R.S (1995). Cochlear implants: Audiological foundations. New Delhi: AITBS.

OC 050: PEDIATRIC AUDIOLOGY

Common to all units

- Northern, J & Downs, M.P (1991). Hearing in children. 4th Edn. Baltimore: Williams & Wilkins.
- Martin, F.N (1978). Paediatric audiology. New Jersey: Prentice Hall.

Martin, F.N. (Ed) (1987). Hearing disorders in children: Paediatric audiology. Austin: Pro. Ed.

Martin, F.N. (1994). Introduction to audiology. 5th Edn. New Jersey: Prentice Hall.

Unit 1:

Bess, F.H (1977). Childhood deafness. New York: Grune & Stratton.

Dale, D.M.C (1970). Applied audiology for children. 2nd Ed. Springfield: C.C. Thomas.

Davis, J.M & Hardick, E.J. (1981). Rehabilitative audiology for children & adults. NY: John Wiley & Sons.

Ling, D (1978). Speech & hearing-impaired child. Washington: Alexander Graham Bell Association for the Deaf.

Morgan, SoH (1998). Universal newborn hearing screening. Seminars in hearing. Vol:19(2).

Rossetti, L (1986). High risk infants: Identification, assessment and intervention. Boston: A College-Hill Publication

Stokes, J (2000). Hearing impaired infants: Support in the first eighteen months. London: Whurr Publishers Ltd.

Unit 2:

Bess F.H.. (1988). Hearing impairment in children. Maryland: York Press Inc.

Eisenberg, R.B (1976). Auditory competence in early life: The roots of communicative behavior. Baltimore: University Park Press:

Gerber, S.E (1982). Audiometry in infancy. New York: Grune & Stratton.

Gerber, S.E. & Mencher, G. T (1978). Early diagnosis of hearing loss. New York: Grune & Stratton.

Hayes, D & Northern, J.L (1996). Infants and hearing. San Diego: Singular Publishing Group Inc.

Mencher, G. T (1976). Early identification of hearing loss. Basel: S. Karger

Unit 3:

Gerber, S.E. & Mencher, G.T (1983). The development of auditory behaviour, New York: Grune & Stratton.

Unit 4:

Eagles, E.L (.1963). Hearing sensitivity and related factors in children. Pennsylvania: University of Pittsburgh.

Fulton, R.T. & Lloyd, L.L (1969). Audiometry for the retarded with implications for the difficult to test. Williams & Wilkins Co.

Fulton, R.T. & Lloyd, L.L (1969). Audiometry assessment of the difficult to test. Baltimore: Williams & Wilkins Co.

Gerber, S.E & Mencher, G.T (.1978). Early diagnosis of hearing loss. New York: Grune & Stratton.

Kemp, D(1973). Evaluation of hearing impaired children. Denmark: 5thDanavoxSymp.
 Shoup, A. &Roeser, R.T (2000).Audiological evaluation in special population. In R.R.
 Roser, M. Valente, H.
 Hosford-Dunn (Eds). Audiological diagnosis. New York: Thieme.
 Stokes, J (2000).0 Hearing impaired infants -support in the first eighteen months.
 London: Whurr Publishers Ltd.

Unit 5:

Moog, J.S &Geers, A.E (1990).Early speech perception test for the profoundly hearing-
 impaired children.St.Louis: Central Institute for the Deaf.
 Sanders & Derek, A (1993). Management of hearing handicap: Infants to elderly. 3rd
 Ed.New Jersey; Prentice Hall.

OC 060: ENVIRONMENTAL AUDIOLOGY

Unit 1:

Chasin, M (1996). Musicians and prevention of hearing loss. San Diego: Singular
 Publishing Group Inc.

Unit 2:

Newby, H.A &Popelka, G.R (1992).Audiology.6th Ed. New York: Appleton-Century-
 Crofts.

Unit 4:

Boyster, U.D & Royster, L.H (1990). Hearing conservation program: Practical guidelines
 for success. Michigan: Lewis Publishers.

OC 070: SCIENTIFIC ENQUIRY IN SPEECH AND HEARING

Common to all units

Hegde, M.N (1987). Clinical research in communicative disorder3: Principles and
 strategies. Boston: College- Hill Press
 Krishnaswamy, C.R (1993). Methodology of research in social science.Bombay;
 Publishing house.

Unit 1:

Broota (1989): Experimental design in behavioural research. New Delhi: Wiley Eastern.
 Kerlinger, F.N. (1964). Foundations of behavioral research. New York: Rinehart and
 Winston.

Pannbaker, M.H (1994). Introduction to clinical research in communication disorders. San Diego: Singular Pub Group.
 Plutchik, R (1968). Foundations of behavioral research. New York: Harper & Row.

Unit 2:

Grosf, M.S & Sardy, H (1985). A research primer for the social and behavioral sciences. New York: Academic Press.

Unit 3:

Doehring (1988). Research strategies in human communication disorder
 Frey (1991). Investigating communication: An introduction to research methods. Inglewood Cliffs: Prentice Hall.
 Hedrick (1993). Applied research design: A practical guide. London: Sage Publications.
 Miller (1997). Handbook of research design and social, measurement. London: Sage Publications.
 Pan de (1989). Research methodology in social science. New Delhi: Anmol Publishers.
 Silverman F,H (1985). Research design and evaluation in speech language pathology, audiology: Asking questions and answering. New Jersey: Prentice Hall.
 Silverman, F.N. Research designs in speech pathology and audiology. Boston: Allyn & Bacon.

Unit 4:

Lindlof (1995). Qualitative communication research methods. California: Sage Publications
 Maxwell satake (1997). Research and statistical methods in communication disorders. Baltimore: Williams & Wilkins

Unit 5:

Schiavelti, L & Metz, R (1997). Evaluating research in communication disorders. Boston: Allyn & Bacon.

ORGANIZATION AND ADMINISTRATION OF SPEECH AND HEARING CENTERS

Asia Pacific disability journals.
 Pandey, R.S (1986). Perspectives in disability and rehabilitation. New Delhi: Sage Publishers
 McLaughlin, R.M (Ed) (1986). Speech-language pathology and audiology: Issues and management. MA: Allyn & Bacon.
 Neidecker et al. (Ed) (1993). School programs in speech-language: Organization and management. USA: Prentice Hall.
 Rizzo, S.R & Trudeau, M.D (Ed) (1994). Clinical administration in audiology and speech-language pathology. San Diego: Singular Publishing Group.

**LIST OF JOURNALS FOR REFERENCE IN SUBJECTS RELATED TO SPEECH –
LANGUAGE PATHOLOGY**

1. JASA (Journal of the Acoustical Society of America)
2. Ear and Hearing
3. Trends in Amplification
4. Scandinavian Audiology
5. American Journal of Audiology
6. Audiology and Otoneurology
7. Hearing Research
8. Journal of Speech and Hearing Research
9. Seminars in Hearing
10. Archives of Otolaryngology
11. Volta review
12. Journal of American Academy of Audiology
13. The Hearing Journal
14. Annals of Otology, Rhinology & Laryngology
15. Journal of Speech and Hearing Disorders

ANNEXURE

APPRAISAL FORM

Name of the trainee :
Posting duration : From20
To20
Number of days attended / allotted :
Name of Supervisor :
Date :
Type of work done : Yes / No
Speech Diagnosis :
Speech Therapy :
Audiological Evaluation :
Survey / Field work :
Grade awarded(Circle the appropriate) : A /B /C /D /E

	<u>Professional and Technical Skills</u>	<u>Excellent</u>	<u>Good</u>	<u>Average</u>	<u>Poor</u>
1.	Interest shown by the student in planning, organizing and implementing therapeutic goals and activities.				
2.	Efficiency in providing a clear and relevant information and feedback to the client and supervisors.				
3.	Involvement in case presentations and clinical.				
4.	Interaction with the patient.				
	<u>Assessment and Reporting</u>				
5.	Efficiency in suing formal and informal tests appropriate analysis, interpretation, counselling and recommendations.				
6.	Submission of lesson plans and therapy reports on time.				
	<u>Personal Quality</u>				
7.	Punctual				
8.	Inform to the supervisors regarding any change in their schedule				
9.	Discipline				

Remarks if any:

Signature with seal

Office seal
