CAREERS 360

PREPARATION Series

Bachelor of Audiology and Speech-Language Pathology (BASLP)

Semester-wise Syllabus & Subjects of BASLP Course

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Semester-wise BASLP Syllabus

About This Ebook

This eBook provides a detailed semester-wise syllabus of the Bachelor of Audiology and Speech-Language Pathology (BASLP) course. It is designed to help students understand what subjects and topics they will study throughout the program. Each semester's content is clearly organized to make it easy for readers to follow and prepare. This guide is useful for students, educators, and anyone interested in the BASLP course structure.

Whether you are planning to join the course or are already enrolled, this eBook will serve as a handy reference throughout your academic journey. It aims to give you a clear understanding of the subjects covered and help you stay informed and well-prepared.

BASLP Syllabus

Semester 1

Introduction to Speech-Language Pathology

Objectives

- Have the basic concepts of speech, language and communication, and the relationship between them
- Know the physical, biological, social, psychological and linguistic bases of speech
- Be able to trace out the stages of normal development of speech and language
- Have the basic skills of assessment and evaluation of speech, language and swallowing disorders
- Know the nature and scope of the field of speech-language pathology

Unit 1: Introduction to Speech-language Pathology

- History and development of speech-language pathology in Indian and global context
- Definition and functions of speech, language, communication, and their components
- Basic models of speech communication:

    - Speech and hearing as a servo system
    - Shannon-Weaver model
    - Lasswell model
    - Berlo model
- Speech chain and speech as an overlaid function
- Bases of speech and language:
    - Anatomical
    - Physiological
    - Neurological
    - Physical
    - Aerodynamic
    - Linguistic
    - Psychological
    - Socio-cultural
    - Genetic
- Introduction to speech-language disorders
- Incidence and prevalence of speech and language disorders
- Definition and descriptions of delay, deviancy, and disorders; impairment, disability and handicap

Unit 2: Normal Development of Speech-language and Basics of Management

- Development of speech-language
- Pre-requisites and factors affecting speech-language development
- Basic concepts and terminologies in speech therapeutics
- General principles of speech and language therapy
- Individual and group therapy
- Approaches to speech-language therapy:
    - Formal
    - Informal
    - Eclectic approaches
- Planning for speech and language therapy – goals, steps, procedures, and activities
- Importance of reinforcement principles and strategies in speech and language therapy
- Types and schedules of rewards and punishment

Unit 3: Assessment and Management of Speech-language and Swallowing Disorders

- Causes of speech-language disorders
- Speech disorders:
    - Fluency disorders
    - Voice disorders
    - Phonological disorders

- Feeding and swallowing disorders
- Overview of assessment procedures for:
    - Voice disorders
    - Articulation and phonological disorders
    - Fluency disorders
- Overview of management procedures for:
    - Voice disorders
    - Articulation and phonological disorders
    - Fluency disorders
- Basic concepts in assessment and management of swallowing disorders

Unit 4: Assessment and Management of Language Disorders

- Types, characteristics and classification of language disorders
- Causes of language disorders
- Overview of assessment procedures for:
    - Child language disorders
    - Adult language disorders
    - Neurogenic language disorders
- Overview of management procedures for:
    - Child language disorders
    - Adult language disorders

    - Neurogenic language disorders
- Issues related to bi/multilingualism
- Early identification and prevention of speech and language disorders

Unit 5: Speech-language Pathology as a Profession

- Professional code of conduct – social, cultural and other ethical issues
- Interdisciplinary nature and scope of practice in speech-language pathology
- Documentation of diagnostic, therapeutic and referral reports
- Evaluation of therapy outcome and follow up
- Evidence-based practice
- Community-based rehabilitation
- Role of itinerant speech therapist, Anganwadis, and resource teachers
- Facilities and concessions available for speech and hearing disabled

Introduction to Audiology

Objectives: After completing this course, the student will be able to

- Describe the basic concepts of hearing sensitivity and acoustics
- Describe the characteristics and causes for different types of hearing loss
- Take case history, administer and interpret tuning fork tests
- Carry out pure tone and speech audiometry on clinical population
- Carry out subjective calibration and daily listening checks of the audiometer
- Explain the theoretical basis of objective calibration of audiometers

Unit 1: Historical Aspects of Audiology and Scope of Audiology

- History of Audiology, development of instrumentation in audiology
- Development of the field of audiology: Indian and global context
- Branches of audiology and scope of audiology
- Multidisciplinary inputs to audiology

Unit 2: Normal Aspects of Hearing

- Sound intensity and concept of decibel; Acoustic energy and power, absolute and relative units – importance of reference: Sound intensity and intensity levels – absolute and relative measurements: Bel – decibels and its application: relationship between intensity and pressure
- Audibility and hearing: Hearing range – intensity and frequency: Minimum audible pressure and field: Estimation of minimum audible levels: Missing six dB: Reference equivalent threshold sound pressure levels and hearing levels: Sensation levels, threshold of pain, most comfortable levels
- Differential sensitivity: Concept of just noticeable difference and its applications: Intensity, frequency and duration discrimination: Magnitude estimation and production: Loudness – equal loudness level contours and its application: Scales of pitch and loudness scales

Unit 3: Hearing Loss

- Hearing loss and related terminologies
- Classification of hearing loss: conductive, sensori-neural, mixed and central
- Characteristics of different types of hearing loss
- Causes of different types of hearing loss: Adult and children: Congenital and acquired: Pre-natal, natal and post-natal causes: Genetic and environmental causes

Unit 3: Case History and Tuning Fork Tests

- Importance of case history taking in audiology practice
- Essential factors to be included in case history for adults and children
- Interpretation of case history information
- Principles, procedure, interpretation, advantages and disadvantages of different tuning fork tests – Rinne, Schwabach, Weber and Bing tests
- Audiometric version of Weber and Bing test

Unit 4: Pure Tone Audiometry

- Classification of audiometers, parts of an audiometer, characteristics and specifications of transducers used (earphones, bone vibrators, loud speakers)
- Audiogram – concept and symbols used
- Clinical method of threshold estimation
- Factors affecting air conduction threshold
- Bone conduction thresholds – measurements, factors affecting; SAL
- Permissible noise levels in the audiometric room

Unit 5: Speech Audiometry

- Terminology, need for speech audiometry and types of stimuli used in speech audiometry, test materials available in Indian languages
- Speech reception thresholds – procedures and application
- Word recognition scores – procedure and applications
- Other measures of speech audiometry: Speech detection threshold, most comfortable level, uncomfortable level
- PIPB function – procedure and applications
- Factors affecting speech audiometry, bone conduction speech audiometry

Anatomy and Physiology of Speech & Swallowing

Objectives: After completing this course, the student will be able to

- Describe the embryonic development of structures subserving speech and swallowing
- Describe the anatomy of the structures involved in speech production
- Describe the process of speech production including voice, and the underlying mechanism including neural control
- Explain the anatomy and physiology of swallowing mechanism

Unit 1: Introduction

- Anatomical terms, positions, and planes of reference
- Cells and tissues of the body
- Basic terminology related to embryology
- Development of larynx and respiratory structures
- Development of structures in the oral cavity

Unit 2: Anatomy of Speech Production

- Anatomy of respiratory structures including larynx
- Structure of articulators in the oral cavity
- Structures of the resonatory mechanism
- Neural structures subserving speech production

Unit 3: Physiology of Speech Production

- Breathing, speech-breathing, and posture
- Role of larynx in voice-speech production
- Mechanism of phonation
- Mechanism of production of speech sounds
- Resonatory mechanisms and their contribution to speech

Unit 4: Anatomy and Physiology of Swallowing

- Structure of the oral cavity for swallowing
- Anatomy of pharynx and esophagus
- Stages and processes of swallowing

Unit 5: Disorders of Speech and Swallowing

- Five examples of embryonic anomalies affecting speech and language
- Speech disorders: fluency disorders, voice disorders, articulatory and resonatory disorders
- Feeding and swallowing disorders

Anatomy and Physiology of Hearing

Objectives: After completing this course, the student will be able to

- Understand the evolution and anatomy of the auditory system including neural supply
- Describe the anatomy and functioning of external ear
- Describe the anatomy and functioning of middle ear system

- Describe the anatomy and functioning of labyrinth
- Describe the functional anatomy of the central auditory pathway

Unit 1: Introduction to general anatomy and embryology

- General anatomical terms
- Development of external
- Development of middle ear
- Development of inner ear
- Five examples of embryonic anomalies affecting auditory system

Unit 2: Anatomy and physiology of External ear

- Anatomy of pinna and external auditory canal
- Auditory and non-auditory functions of external ear including localization
- Head shadow effect, inter-aural intensity and time differences
- Brief anatomy of the temporal bone

Unit 3: Anatomy and physiology of middle ear

- Anatomy of middle ear including tympanic membrane
- Auditory and non-auditory functions of the middle ear
- Middle ear transformer action
- Anatomy and physiology of Eustachian tube

Unit 4: Anatomy and physiology of labyrinth

- Anatomy of the bony and membranous labyrinth
- Micro and macro anatomy of cochlea
- Innervations and blood supply to cochlea
- Physiology of cochlea
- Electrical potentials of the cochlea
- Hearing through bone conduction
- Overview to physiology of balancing mechanisms

Unit 5: Auditory Nerve and Central auditory pathway

- Anatomy and Physiology of the Auditory nerve
- Functional anatomy of the central auditory pathway and its physiology

Practicals: Speech- Language Pathology

The objectives of the course are to provide skills to

- Identify normal speech and language development
- List various parameters of speech and language skills
- Gather case history, and conduct oral peripheral examination
- Differentiate normal versus disordered speech and language skills in children and adults
- List strategies/tools for assessment and techniques for therapy to facilitate speech and language skills in children and adults

Perform

- List the available clinical facilities and clinical activities of the department/institute
- List the sources of referral for speech and language disorders (to and from the department)
- List various public education materials/ videos that are available in the department
- List various assessment materials available for the evaluation of speech-language disorders
- Prepare a chart and show the developmental stages of speech and language behavior
- Compile the normative data available in Indian languages with reference to speech sound acquisition
- Prepare a report on the available clinical facilities and clinical activities of your institute
- Use IPA to transcribe spoken language sample. Standard passage may be used. Identify the number of phonemes and syllables in a list of words/passage
- Record a speech sample and analyse the parameters (voice, articulation, fluency, stress, rhythm, resonance)
- Record a neurotypical child's language sample and analyse various parameters of language
- Measure the following: Habitual frequency, Frequency range, Intensity, Intensity range, Phonation duration, Rate of speech, Alternate Motion Rates, Sequential Motion Rates, s/z ratio
- List the available test material in the clinic for assessing various parameters of speech and language. Familiarize with three commonly used language test materials at the institute – Ex: Assessment of Language Development, ComDEALL Developmental Checklist (CDDC), Language Assessment Tool (LAT). Administer on one typically developing child and one child with language disorder

- List and demonstrate components of case history for communication disorders
- Perform oral mechanism examination on two neurotypical children and adults
- Perceptual analysis of speech parameters in persons with communication disorders – fluency, articulation, voice (3 adults, 3 children)
- Prepare the following reports for various speech and language disorders: diagnostic report, baseline report, lesson plan, progress report, and discharge report
- List the commonly used speech language stimulation techniques and perform a role play
- List reinforcement strategies. Prepare some reinforcers that can be used in diagnostics or therapy
- Prepare a list of sources of referrals and a response letter to the referral source
- Prepare diagnostic & therapy kits and a checklist for parent counseling
- Observe the assessment and counseling of different speech and language disorders in children and adults
- Observe the speech and language therapy of different speech and language disorders in children and adults
- Observe the use of various software and instruments used for the assessment and management of speech and language disorders
- Document ICF classification of various speech-language disorders
- Document DSM V and ICD 11 classification of various speech-language disorders

Practicals- Audiology

- Daily listening check and trouble shoot of different clinical audiometers

- Preparation of correction factor chart after biological calibration on individuals with normal hearing

- Getting familiar with different clinical audiometers, parts of audiometers and their functions

- Familiarization with different types of transducers – earphones/ear cushion combination, speakers, insert earphones, bone vibrators

- Appropriate placement of various transducers on clients during Audiometry including masking

- Get familiar with instructions for carrying out pure tone audiometry, Speech audiometry and masking in 5 different languages at least

- Familiarization with different types of stimuli used in audiometry

- Establishment of PT thresholds (AC & BC) using ascending, descending and modified Hughson Westlake procedures in 5 individuals with normal hearing

- Estimation of bone conduction threshold with forehead and mastoid placements in 5 individuals with normal hearing

- Familiarization with different symbols used on audiogram for unmasked and masked AC, BC, SRT, and SIS for different transducers for right and left ear

- Familiarization with materials used for speech audiometry in different Indian languages and English for adults and children

- To observe the counselling before and after audiological testing

- Establishing UCL, MCL, DR, SRT, SDT & SIS on 5 individuals with normal hearing

- Administration of clinical masking on 5 individuals with normal hearing

- Familiarization with different equipment used for objective calibration of audiometers

- Observation of objective calibration procedure for audiometers as per standards
- Administration of SAL and Rainville on 5 individuals with normal hearing

Semester 2

Fluency and its Disorders

Objectives: After completing the course, the students will be able to

- Identify the normal aspects of fluency, its variability, and factors influencing its development
- Describe the terminologies, classification and characteristics of stuttering and other fluency disorders
- Assess fluency and dysfluency, and differentiate different variations of fluency disorders (stuttering, neurogenic stuttering, cluttering)
- Plan and serve management strategies for persons with fluency disorders
- Plan strategies and aspects to prevent development and relapse of stuttering
- Counsel persons affected as well as their family members

Unit 1: Fluency

- Definition of fluency and dimensions of fluency
- Factors influencing fluency of speech
- Definition and characteristics of suprasegmentals in speech
- Development of fluency and its components
- Variables affecting development of fluency

- Typical disfluency, characteristics

Unit 2: Stuttering and Other Fluency Disorders

- Developmental stuttering – Definition, core and secondary characteristics, attitudes and anxiety issues in adults and children who stutter
  (a) Development of stuttering: from onset to adulthood (Bloodstein's phases, VanRiper's tracks, Conture's classification, Guitar's classification)

- Nature of stuttering – prevalence and incidence, gender ratio, variability, recovery, fluency-inducing conditions, adaptation effect, multilingual issues

- Cause(s) of stuttering – introduction to theories of stuttering
  (a) Learning and Psychological theories: Diagnosogenic theory, Classical and operant conditioning, Personal Construct Theory, Anticipatory Struggle Hypothesis, Breakdown Hypothesis, Repressed Need Hypothesis
  (b) Organic Theories: Cerebral dominance, Genetic basis of Stuttering
  (c) Speech Motor Control Theories: Zimmerman's Model, Cyberkinetic or servo system Model, Interhemispheric inference Model, The Variability Model, DIVA and GODIVA Model
  (d) Psycholinguistic Theories: Covert Repair Hypothesis, EXPLAN Theory, Fault-line Hypothesis
  (e) Multifactorial Models: Demands–Capacities Model, Neurophysiological Model, CALMS Model, Communication–Emotional Model, Dual-Diathesis Stressor Model

- Acquired stuttering (neurogenic stuttering, psychogenic stuttering), Cluttering

Unit 3: Assessment and Differential Diagnosis of Fluency Disorders

- Case History for Preschool, School-age, adolescents, and adults
  (a) Speech sample recording
  (b) Speech sample transcription

- Assessment of core and secondary behaviours
  (a) Tools for quantification of core and secondary behaviours
  (b) Assessment of Speech naturalness
  (c) Assessment of feelings and attitudes accompanying stuttering

(d) Assessment of the impact of stuttering

- Closing interview

- Differential diagnosis of fluency disorders (stuttering, cluttering, neurogenic stuttering and typical dysfluency)

- Mobile applications related to assessment of stuttering

Unit 4: Management of Stuttering

- Counselling, Prevention and early identification of stuttering

- Management of stuttering – approaches and rationale

- Management of Children with stuttering: preschool and school-age children (Direct vs. Indirect Approaches)
  (a) Indirect approaches: Parent-child interaction Therapy
  (b) Direct Approaches: LIDCOMBE Program, Westmead Program, Response Cost, RESTART-DCM
  (c) Evidence in Indian context
  (d) Analogies

- Management of Adults with stuttering: Treatment goals
  (a) Fluency shaping vs. stuttering modification approaches
  (b) Fluency shaping
  (c) Prolonged Speech
  (d) Shadowing
  (e) Habit rehearsal Techniques
  (f) Light Articulatory Contact
  (g) Flow and Slow Method / Modified airflow Technique
  (h) Comprehensive Stuttering Program
  (i) Camperdown Program
  (j) Successful Stuttering Management Program
  (k) Cognitive Behavior Therapy
  (l) Group therapy
  (m) Measurement of therapy progress and naturalness rating

- Issues of speech naturalness in stuttering

- Relapse and recovery from stuttering

- Instrumental approaches for the management of stuttering: DAF, mobile applications related to management of stuttering

Unit 5: Management of Fluency-Related Entities

- Management of stuttering – its rationale, techniques and strategies in:
    (a) Children with stuttering
    (b) Adults with stuttering
    (c) Neurogenic stuttering
    (d) Cluttering

- Relapse and recovery in neurogenic stuttering and cluttering

- Counselling

- Prevention and early identification of stuttering and cluttering

Practical Tasks

- Assess the dimensions of fluency and rate of speech in 5 normal adults

- Record and analyse suprasegmental features in typically developing children between 2 and 5 years

- Record audio visual sample of 5 typically developing children for fluency analysis

- Record audio visual sample of 5 typical adults for fluency analysis

- Listen/see samples of normal non-fluency and stuttering in children and document the differences

- Identify the types of dysfluencies/secondary behaviours in the recorded samples of adults with stuttering

- Administer SPI on 3 typically developing and 2 children with stuttering

- Administer CALMS rating scale on 3 typically developing and 2 children with stuttering

- Administer SSI on 5 typically developing children
- Administer SSI on 5 adults with normal fluency
- Administer OASES–S on 5 children
- Administer OASES–A on 5 adults with normal fluency
- Administer naturalness rating scale on 5 adults with normal fluency and 3 recorded samples of stuttering
- Instruct and demonstrate the following techniques: Airflow, prolongation, easy onset and shadowing techniques
- Record 5 speech samples with various delays in auditory feedback and analyse the differences

Diagnostic Audiology- Basic

Objectives: After completing this course, the student will be able to

a) explain masking and carry out audiometry with masking
b) carry out subjective calibration and daily listening checks of the audiometer
c) explain the theoretical basis of objective calibration of audiometers
d) apply appropriate test battery of behavioural tests to differentially diagnose cochlear and retrocochlear pathology
e) apply appropriate test battery of behavioural tests to identify functional hearing loss
f) explain the origin of otoacoustic emissions and record the same in adults and children

Unit 1: Clinical Masking & Calibration

- Purpose and rationale of clinical masking: Interaural attenuation and factors affecting interaural attenuation
- Different types of stimulus employed in clinical masking, minimum and maximum masking level for masking
- Different procedures for masking during pure tone audiometry, speech audiometry

- Definition and purpose of calibration, daily listening checks and subjective calibration

- Objective calibration of intensity through different transducers (air conduction, bone conduction, sound field)

- Objective calibration of frequency and distortion

Unit 2: Introduction to Diagnostic Audiology

- Concept of clinical decision analysis (sensitivity, specificity, true positive, true negative, false positive, false negative and hit rate)

- Screening tests for hearing loss, difference between screening and diagnostic test

- Characteristics of a good diagnostic test: behavioural and physiological

- Need for test battery approach in auditory diagnosis and integration of the audiological tests results, cross-check principle

- Communicating results of screening and diagnostic tests to clients/caretakers and making appropriate referrals

Unit 3: Behavioural Tests to Diagnose Cochlear Pathology and Retro-cochlear Pathology

- Behavioral and clinical indications for cochlear pathology, retro-cochlear pathology

- Physiological bases of recruitment/softness imperception and adaptation

- Behavioural tests of recruitment/softness imperception: ABLB, MLB, dynamic range

- Tests of adaptation, SISI

- PIPB function, brief tone audiometry, Bekesy audiometry

- Test to identify dead regions of cochlea

Unit 4: Behavioural Tests to Diagnose Cochlear Pathology, Retro-Cochlear Pathology, Functional Hearing Loss

- Behavioural and clinical indicators of functional hearing loss
- Pure tone tests including tone in noise test, Stenger test, Bekesy audiometry, brief tone audiometry, pure tone DAF
- Speech tests including Lombard test, Stenger test, lip-reading test, Doerfler-Stewert test, low level PB word test, Yes-No test, DAF test
- Identification of functional hearing loss in children: swinging story test, pulse tone methods
- Counselling clients with functional hearing loss

Unit 5: Otoacoustic Emissions

- Origin and classification of OAEs
- Principle of instrumentation used for recording OAEs
- Recording and interpretation of OAEs: SOAE, TEOAEs, and DPOAEs
- Clinical applications of OAEs: SOAE, TEOAEs, and DPOAEs
- Contralateral suppression of OAEs and its clinical implications

Practical Tasks

- Carry out clinical masking on 10 normal hearing individuals with simulated conductive hearing loss and carry out clinical masking on 5 individuals with conductive hearing loss and 5 individuals with sensorineural hearing loss
- Carry out daily listening checks and subjective calibrations 20 times and observe objective calibration once

- Administer ABLB, MLB and prepare ladder gram (ABLB to be administered by blocking one ear with impression material)
- Administer classical SISI on 3 individuals and note down the scores
- Administer tone decay tests (classical and its modifications) and note down the results (at least 3 individuals)
- Administer Bekesy audiometry
- Administer Brief tone audiometry
- Plot PIPB function using standardized lists in any 5 individuals
- Administer the tests of functional hearing loss (both tone based and speech based) by asking subject to malinger and having a yardstick of loudness
- Record TEOAEs and note down the amplitude, SNR, noise floor and reproducibility at octave and mid-octave frequencies. Note down the stimulus stability and the overall SNR (10 ears)
- Record DPOAEs and note down the amplitude, SNR, noise floor and reproducibility at octave and mid-octave frequencies (10 ears)

Linguistics and Phonetics

Objectives: After completing this course, the student will be able to understand

- different branches and aspects of linguistics
- characteristics and functions of language
- different branches of phonetics, applied linguistics, and phonology
- morphology, syntax, semantics, pragmatics
- acquisition of language and factors affecting it
- bi/multilingualism and related issues

Unit 1: Introduction to Linguistics

- Different branches of linguistics: Applied linguistics, sociolinguistics, psycholinguistics, neurolinguistics and clinical linguistics
- Language characteristics and functions; difference between animal communication systems and human language
- 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
- Inflection and derivation, paradigmatic and syntagmatic relationship
- Concepts in linguistics: competence vs. performance, langue vs. parole etc.

Unit 2: Phonetics and Phonology

- Introduction to phonetics: articulatory, acoustic, and auditory phonetics
- Articulatory classification of sounds – segmental and supra-segmental; classification, description and recognition of vowels and consonants
- Transcription systems with special emphasis on IPA
- Introduction to phonology; classification of speech sounds on the basis of distinctive features
- Phonotactics: phonotactic patterns of English and Indian languages
- Phonemic analysis – principles and practices
- Phonological processes

Unit 3: Morphology, Syntax, Semantics and Applied Linguistics

- Morphology – concepts of morph, allomorph, morpheme, roots, compound forms; endocentric and exocentric constructions; free and bound morphemes;

morphemic analysis; inflection and derivation

- Syntax – concepts of phrases and clauses, sentence and its types
- Different methods of syntactic analysis – immediate constituent analysis, phrase structure grammar, transformational generative grammar – deep structure vs. surface structure, acceptability vs. grammaticality
- Introduction to the major types of transformations
- Processes of word formation: content and function words
- Semantics, semantic relations, semantic feature theory
- Pragmatics and discourse

Unit 4: Language Acquisition

- Issues in first language acquisition: pre-linguistic stages, linguistic stages
- Acquisition of phonology, morphology, syntax, semantics, and pragmatics
- Language and cognition
- Applied linguistics with special reference to communication disorders
- Usefulness of morphemic and syntactic analysis in planning speech-language therapy

Unit 5: Bi/Multilingualism

- Introduction to the language families of India
- Issues related to second language acquisition and factors influencing it
- Inter-language theory, language transfer and linguistic interference
- Differences between first and second language acquisition/learning

- Bilingualism/Multilingualism
- Indian writing systems

Otolaryngology

Objectives: After completing this course, the student will be able to understand the

- identify the causes and signs/symptoms of different pathological conditions of the ear leading to hearing loss
- understand the principles of management of diseases of pathological conditions of the ear leading to hearing loss
- identify the causes and signs/symptoms of different pathological conditions of the laryngeal system leading to voice disorders

Unit 1: External and Middle Ear and Their Disorders

- Clinical anatomy of external and middle ear
- Congenital anomalies of the ear
- Diseases of the external ear – tumors, perforation and ruptures of the tympanic membrane, and Eustachian tube dysfunction
- Otitis media with effusion
- Cholesteatoma and chronic suppurative otitis media
- Otosclerosis
- Trauma to the temporal bone
- Facial nerve and its disorder

Unit 2: Inner Ear and Its Disorders

- Clinical anatomy of inner ear

- Congenital anomalies
- Meniere’s disorder
- Ototoxicity
- Presbycusis
- Disorders of the vestibular system including vestibular Schwannoma
- Tinnitus and medical line of treatment
- Overview of surgical techniques for restoration and preservation of hearing

Unit 3: Oral Cavity and Its Disorders

- Anatomy and physiology of the oral cavity
- Malformation and inflammations of lip and oral cavity
- Benign, premalignant, and malignant tumors of the oral cavity
- Clinical anatomy and physiology of pharynx
- Inflammatory conditions of the pharynx, tonsils and adenoids
- Benign, premalignant, and malignant tumors of the pharynx

Unit 4: Larynx and Its Disorders

- Clinical anatomy and physiology of larynx
- Clinical examination of larynx
- Stroboscopy – technique, procedure, interpretation and precautions
- Congenital laryngeal pathologies

- Inflammatory conditions of the larynx
- Benign and malignant tumors of the larynx
- Laryngectomy – overview of surgical procedure
- Phonosurgery and other voice restoration surgeries
- Airway management procedures

Unit 5: Esophagus and Its Disorders

- Clinical anatomy and physiology of esophagus
- Clinical examination of esophagus
- Congenital anomalies of esophagus
- Inflammatory conditions of esophagus
- Benign and malignant tumors of esophagus
- Medical management of these pathological conditions

Optional Minor 1

- Each participating institution can offer any of the following as minor optional. However, a course once offered cannot be repeated for the same batch.
- The institution itself can draw the syllabus for the course.
  a) Developmental Pediatrics

  b) Genetics

  c) Counseling and Guidance

  d) Basics of Sign Language

  e) CBR

  f) Dysphagia

  g) Auditory Habilitation

h) Vestibular Disorders

i) Disability Certification

j) ASLP in Practice

k) AAC

l) Telerehabilitation

Clinicals in Speech-Language Pathology

General Considerations

- Clinical work should be primarily linked to the theory courses of the semester
- After completion of clinical postings in Audiology, the student will have the concept (Know), ability to apply (Knowhow), demonstrate in a clinical diary/log book (Show), and perform (Do) the following on clinical population
- The students will be able to document observations made during clinical work

Know

- Study normative data (Indian / Western) relating to phonology, semantics, syntax, morphology, pragmatics, voice, articulation, fluency and prosody, and relate them to clinical population
- Record case history of a minimum of four affected persons and compare it with that of normal persons
- Transcribe speech samples and identify instances of deviance with reference to speech samples of normal persons
- List various speech & language stimulation techniques with descriptions and illustrations

- Observe and learn evaluation/assessment process and counseling of at least three children and adults with fluency disorders

- Observe and document the results of assessment of speech fluency through standardized tests

- Record speech samples from persons with stuttering and identify stuttering instances and measure rate of speech

- Observe management / therapeutic procedures with children and adults with speech and language disorders

- Prepare a diagnostic and therapy kit for a person with stuttering or delayed speech-language development

- Familiarize with the basics of counseling procedures – client as well as parents

Knowhow

- Count the number of phonemes and syllables and identify the class of words, phrases, syllable structure, and syntactic structure in a recorded standard passage (native language and English)

- Determine the speech and language skills of individuals with and without speech and language disorders and perceptually analyse the variations in these skills across age and gender

- Differentiate the speech characteristics between normal non-fluency and developmental stuttering by observing audio-video samples

- Differentiate the speech characteristics between developmental, neurogenic, and psychogenic stuttering by observing audio-video samples

- Differentiate the speech characteristics between developmental stuttering and cluttering by observing audio-video samples

- Use software/applications/instruments used for assessment and management of individuals with fluency disorders

Show

- Perform transcription of recorded speech samples in native language and English
- Demonstrate how to perform a detailed interview for individuals with fluency disorders
- Analyze and document the core and secondary features of stuttering, adaptation effect and individual and situational variations in individuals with stuttering
- Analyze and document the speech characteristics of individuals with cluttering
- Demonstrate stress, intonation and variations in rate of speech and analyze perceptually variations in prosody in different recorded samples of typical individuals in different age and gender
- Record audio-visual speech samples of children and adults with and without fluency disorders and analyze and compare dysfluencies, secondary behaviors (if any), rate of speech, articulatory rate
- Diagnose cluttering using available screening/diagnostic tool(s)
- Administer, interpret, and diagnose stuttering using standardized test material in children and adults
- Administer 9-point speech naturalness rating scale on individuals with and without stuttering
- Administer and interpret the results of quality-of-life questionnaire on individuals with fluency disorders
- Record speech samples of individuals with and without fluency disorders and with delay in auditory feedback; analyze and compare the results
- Demonstrate therapy techniques used for management of fluency disorders in children and adults

Do

- Perform case history for children and adults with speech-language disorders
- Prepare a diagnostic kit used for the assessment of speech-language disorders
- Prepare a therapy kit used for speech-language therapy

Clinicals in Audiology

After completion of clinical postings in Audiology, the student will have the concept (Know), ability to apply (Knowhow), demonstrate in a clinical diary/log book (Show), and perform (Do) the following on clinical population

Know

- Methods to calibrate audiometer
- Materials commonly employed in speech audiometry
- Calculation of pure tone average, percentage of hearing loss, minimum and maximum masking levels
- Different types of hearing loss and their common causes

Knowhow

- To obtain detailed case history from clients or parents/guardians
- To carry out commonly used tuning fork tests
- To administer pure tone audiometry including appropriate masking techniques on adults
- To administer tests to find out speech reception threshold, speech identification scores, most comfortable and uncomfortable levels on adults

Show

- Plotting of audiograms with different degrees and types using appropriate symbols – 2 audiograms per degree and type

- Detailed case history taken and its analysis

- Calculation of degree, type and percentage of hearing loss on 5 sample conditions

Do

- Case history on at least 5 adults and 3 children with hearing disorders

- Tuning fork test on at least 5 individuals with conductive and 5 individuals with sensorineural hearing loss

- Pure tone audiometry with appropriate masking on 5 individuals with conductive, 5 individuals with sensorineural hearing loss and 3 individuals with unilateral/asymmetric hearing loss

- Speech audiometry on 5 individuals with conductive, 5 individuals with sensorineural hearing loss and 3 individuals with unilateral/asymmetric hearing loss

Internal evaluation shall be based on

- Attendance

- Clinical diary

- Log book

- Learning conference

External evaluation shall include

- Spot test

- OSCE

- Record
- Viva-voce
- Case work

Semester 3

Child Language Disorders

Objectives: After completing this course, the student will be able to

- explain the process of acquisition of language and factors that influence its development in children
- identify and assess language delay and deviance in children
- select appropriate strategies for intervention
- counsel and provide guidance to parents/caregivers of children with language disorders
- initiate advocacy programs for children with language disorders

Unit 1: Bases of Language Acquisition and Development

- Theories of language acquisition in children – biological maturation, cognitive theories, linguistic theories, information processing theories, behavior theories, social interaction theories, pragmatic/discourse theories
- Development of components of language from birth to two years (pre-linguistic/presymbolic to symbolic), during preschool period, and during early school age and beyond
- Language acquisition including bilinguals/multilinguals – types (based on age, manner of acquisition), factors affecting language acquisition

- Factors affecting language development in children including environmental factors (language environment, neglect, abuse, socioeconomic status) and biological factors (twins, multiple pregnancies, genetics)

Unit 2: Language Disorders and Their Characteristics

- DSM-5 and ICD-10 classification of language disorders
- Definition, general characteristics, language characteristics, causes, and comorbidities in the following conditions:
    - Hearing impairment
    - Intellectual disability
    - Syndromes (Down Syndrome, Fragile-X, William's Syndrome, Klinefelter's Syndrome)
    - Autism Spectrum Disorders
    - Specific language impairment/developmental language disorders, ADHD
    - Acquired Childhood Aphasia
    - Learning disability
    - Other developmental disabilities: deaf-blind, cerebral palsy, multiple disabilities

Unit 3: Assessment of Children with Language Disorders

- Preliminary components of assessment: Case history, screening, evaluation of environmental, linguistic & cultural variables
- Methods to assess children: formal vs informal assessment; types of assessment materials – scales, checklists, developmental scales; concepts of standardization, reliability, validity, sensitivity, specificity

- Informal assessment – pre-linguistic behavior, play, mother-child interaction, language sampling, audio-video recording, transcription
- Analysis of language sample – phonology, morphology, syntax, semantics, pragmatics
- Test materials: Assessment of Language Development, 3D Language Assessment Test, Linguistic Profile Test, Com-DEALL checklist
- Psychological tools for developmental delay/intellectual disability: Madras Developmental Program Scale, Bayley's Scale, others
- Tools for autism assessment: M-CHAT, ISAA, INCLEN, ADOS
- Tools for ADHD assessment: DSM-5 checklist, Connors Rating Scales
- Tests for acquired childhood aphasia: CAAST
- Tests for learning disability: Early Reading Skills, Early Literacy Screening Test, NIMH LD battery, DALI
- Documentation: diagnostic report, summary report, referral report
- Differential diagnosis of language disorders in children

Unit 4: Management of Language Disorders in Children – I

- General principles and strategies of intervention – purpose, basic approaches (developmental, functional)
- Choice of language for intervention, incorporating multicultural principles
- Overview of approaches and techniques for various developmental disorders
- Specific language intervention techniques: Incidental teaching, self-talk, parallel talk, expansion, extension, recasting, joint routines, joint book reading, whole language, modifying input, communicative temptations, drill, modeling, focused stimulation, vertical structuring, milieu teaching, redundancy, chunking

Unit 5: Management of Language Disorders in Children – II

- Overview of Augmentative and Alternative Communication – types (aided, unaided), application
- Importance of team approach – roles of medical, surgical, physiotherapy, occupational therapy, psychology professionals
- Importance and role of caregivers and family in intervention
- Benefits, concessions, and rights for children with language disorders
- Use of technology and tele-rehabilitation in language intervention

Practical Tests

- Record mother-child interaction of one typically developing child each in the age range of 0–1, 1–2, 2–4, 4–6, and 6–8 years of age
    - Compare linguistically the outputs from the mother and the child across age groups
    - Make inferences on sociocultural influences in these interactions
- Make a list of loan words in two familiar languages based on interaction with 10 typically developing children each in the age range of 2–4, 4–6, 6–8, and 8–10 years
    - Discuss the influence of bi- or multilingualism on vocabulary
- Record a conversation and narration sample from 3 children – one child each in preschool, kindergarten, and primary school
    - Perform language transcription and analyze for form, content, and use
- Administer 3D LAT, ALD, LPT, and ComDEALL checklist on any 2 typically developing children
- Draft a diagnostic report and referral letter for a child with language disorder
- Demonstrate general language stimulation techniques and discuss the clinical application

- Demonstrate specific language stimulation techniques with appropriate materials and discuss their clinical applications

- Draft a Subjective Objective Assessment Plan (SOAP) for a pre-recorded 45-minute intervention session of a child with language disorder

- Draft a lesson plan for a child with language disorder

- Draft a discharge summary report for a child with language disorder

Group Work

- Record mother-child interaction of one typically developing child each in the age range of 0–1, 1–2, 2–4, 4–6, and 6–8 years of age

    - Compare linguistically the outputs from the mother and the child across age groups

    - Make inferences on sociocultural influences in these interactions

- Make a list of loan words in two familiar languages based on interaction with 10 typically developing children each in the age range of 2–4, 4–6, 6–8, and 8–10 years

    - Discuss the influence of bi- or multilingualism on vocabulary

- Make a flier, PowerPoint, or video for creating awareness on language disorders in children

Individual Work

- Record conversation and narration samples of 3 children – one child each from preschool, kindergarten, and primary school

    - Perform language transcription and analyze for form, content, and use

- Take a detailed case history and administer 3D LAT or REELS, ComDEALL checklist and ALD or MTCDM or language test in regional language on one typically developing child in the age range of 1 to 3 years

    - Draft a language assessment report

- Take a detailed case history and administer LPT or ALD or a regional language test on one typically developing child above the age of 3 years

- Observe one complete language assessment of a child with language disorder
    - Draft a diagnostic report and referral letter for the child
- Demonstrate (in role play format) specific language stimulation techniques with appropriate materials
    - Discuss clinical applications
- Draft a SOAP for a pre-recorded 45-minute intervention session for a child with language disorder
- Draft a therapy plan for a child with language disorder based on a detailed assessment report discussed in class
- Draft a discharge summary report for a child with language disorder based on one detailed assessment report discussed in class

Amplification Devices

Objectives: After completing this course, students will be able to

- assess candidacy for hearing aids and counsel accordingly
- evaluate the listening needs and select appropriate hearing aid
- program digital hearing aids as per the listening needs of the client
- assess the benefit from the hearing aid using subjective and objective methods
- take ear impression and prepare appropriate earmold
- counsel the parents/caregivers at all stages
- make appropriate selection of assistive listening devices and advise the clients

Unit 1: Types of Hearing Aids

- Historical development of hearing aids: A brief overview
- Review of basic elements of hearing aids: Microphone, Amplifier, Receiver/Vibrator, Cords, Batteries

- Classification and Types of hearing aids:
    - Body level, Ear level, RIC, ITC, CIC, IIC
    - Binaural, pseudo binaural, monaural
    - Analog, Programmable, Trimmer digital, and Digital hearing aids
    - CROS hearing aids
- Group amplification: hard wired, induction loop, FM, infrared
- Assistive listening devices

Unit 2: Technological Aspects in Hearing Aids

- Output limiting and issues: peak clipping, compression
- Concept and use of compression in hearing aids: BILL, TILL, PILL, Wide Dynamic Range Compression, Syllabic Compression, Dual Compression
- Signal processing in hearing aids: speech enhancing technology, microphone directionality, noise reduction algorithms
- Extended low frequency amplification, frequency lowering technology (transposition, compression)
- Digital wireless technologies and their application in hearing aids
- Recent advances in hearing aids

Unit 3: Electro-acoustic Measurements for Hearing Aids

- Need for electro-acoustic measurements
- Instrumentation of electro-acoustic measurements, environmental tests
- Purpose and parameters to be considered:
    - OSPL90, SSPL90, HFA SSPL90
    - Gain, Full on Gain, HFA Full on Gain

    - Reference test Gain, Basic Frequency Response
    - Total Harmonic Distortion, Intermodulation Distortion
    - Input-output functions, instrumentation, procedure
- Variables affecting EAM, EAM of digital hearing aids
- National and International standards for hearing aids: BIS, IEC, and ANSI

Unit 4: Selection and Programming of Hearing Aids

- Pre-selection factors
- Selecting linear and nonlinear digital hearing aids
- Hearing aid selection using prescriptive procedures
- Hearing aid selection using comparative procedures
- Programming of hearing aids
- Over-the-counter hearing aids
- Care, maintenance, and troubleshooting of hearing aids
- Counselling and orienting the hearing aid user and significant others

Unit 5: Mechano-acoustic Couplers (Earmoulds)

- Different types of earmold
- Procedure for making hard and soft moulds
- Applications of laser and 3D-printing for ear moulds, UV curing methods
- Special modifications in earmoulds:
    - Vents (diagonal and parallel), deep canal moulds, short canal
    - Horns, Libby horn, reverse horn, acoustic modifiers
- Effects of mechano-acoustic couplers on hearing aid output

Practical Tests

- Listen to the output of different types and classes of hearing aids (monaural, binaural, analog, digital hearing aids) in different settings
- Troubleshoot hearing aids: check the continuity of the receiver cord using a multimeter, measure the voltage of different-sized batteries using a multimeter, check voltage of batteries of different types and sizes
- Carry out electroacoustic measurements of hearing aids
- Program the hearing aid for different configurations and degrees of hearing loss (at least 5 different audiograms) using different prescriptive formulae
- Program the hearing aid for different listening situations (at least 3 different situations)
- Vary the compression settings in a digital hearing aid and note down the differences in the output
- Observe assistive listening devices such as telephone amplifiers, vibro-tactile alarms; note down the candidacy and their utility
- Administer a questionnaire to assess hearing aid benefit on 2 persons using hearing aids
- Carry out a role play activity of counseling a hearing aid user
- Take impression for the ear mold using different techniques, different methods and using different materials

Electronics and Acoustics

Objectives: After completing this course, the student will be able to

- Identify the types of power supply for clinics and biomedical instruments
- Understand the basic aspects of digital signal processing and speech processing
- State the theoretical basis of acoustics required for audiologists

- Understand the basic aspects of information technology
- Analyze the principles of working of major instruments used in assessment

Unit 1: Introduction to Electronics and Signals

- Basic principle of operation and working of:
    - Variable resistors, digital potentiometers
    - Inductors, transformers
    - Amplifiers – concept of gain, frequency response and bandwidth
- Power supply:
    - DC power supply – block diagram description and working
    - AC power supply, earthing, isolation transformers
    - UPS
- Analog and digital signal:
    - Decimal and binary number system, conversion of decimal to binary and vice versa
    - Analog signal & digital signal – representation and comparison
    - Converting analog signal to digital and digital to analog

Unit 2: Introduction to Acoustics

- Physics of Sound:
    - Nature and propagation of sound
    - Frequency, wavelength, amplitude, velocity
    - Sound pressure level
    - Loudness, phon, equal loudness contour
- Sound propagation in closed rooms:

    - Reflection, transmission, and absorption; absorption coefficient
    - Reverberation, reverberation time, Sabine's formula; techniques to reduce reverberation
    - Sources of background noise in a room; speech-to-noise ratio
    - Acoustically treated rooms – basic requirements, concept, and structure for hearing testing and sound recording
- Transducers:
    - Microphones – moving coil, condenser, electret
    - Loudspeakers, headphones, receivers – moving coil and balanced armature

Unit 3: Basics of Sound Recording, Signal Representation and Digital Signal Processing

- Representation of sound signal and sound recording:
    - Time domain
    - Frequency domain
    - Spectrogram
    - System and software for sound recording
- Fundamentals of digital signal processing (DSP):
    - Basic structure of a digital processing system
    - Analog signal processing vs. digital signal processing – comparison, merits and demerits
    - Applications of DSP in communication sciences and disorders
- Speech processing:
    - Time domain methods of speech processing
    - Frequency domain methods of speech processing

Unit 4: Introduction to Information Technology

- Computer hardware:
    - Processor, motherboard, hard disk, RAM
    - Specification of personal computers and laptops
- Software:
    - Operating systems – types, comparison, and functioning
    - Application software used in communication sciences and disorders
    - Mobile apps – concept and functioning
- Computer networking:
    - Structure of internet and worldwide web
    - Local Area Network – structure and components
    - Tele-diagnosis and tele-rehabilitation

Unit 5: Instrumentation in Speech and Hearing

- Common elements in instruments:
    - Pre-amplifiers and power amplifiers
    - Filters – role in signal processing, different types and their frequency response
- Principle of operation, technology of:
    - Digital hearing aids
    - Group amplification and assistive listening devices
    - Audiometers
    - Middle ear analyzers
    - Systems for speech and voice analysis

- Calibration of audiometers:
    - Equipment for calibration – sound level meter, artificial ear, artificial mastoid, couplers
    - Equipment setup and procedure for output calibration of pure tone audiometer in AC and BC mode

Psychology for Speech and Hearing

Objectives: After completing this course, the student will be able to

- Explain the scope of clinical psychology and its significance for speech and hearing
- Apply the concept of normality and abnormality to communication disorders
- Describe the cognitive, motor, emotional and social development
- Apply theories of learning and therapy techniques based on learning principles to communication problems
- Understand the principles of neuropsychological assessment
- Get exposed to the basics of counseling

Unit 1: Introduction to Psychology and Clinical Psychology

- Introduction, definition, history, schools and branches of psychology
- Introduction to clinical psychology: scope and meaning
- Historical development: modern clinical psychology
- Scope and role of clinical psychology in communication sciences and disorders
- Criteria of normality and abnormality
- Models of mental disorders: biological, psychological, and social models

Unit 2: Assessment Procedures in Clinical Psychology

- Case history and mental status examination – summary of case history, diagnostic formulation and diagnosis; clinical interviewing; clinical observation
- Introduction to psychological assessment and psychological testing – definition, differences and similarities
- Types of psychological assessment
- Assessment of cognitive and adaptive functions, personality; behavioral and vocational assessment
- Classification of abnormal behavior – history, need and rationale of classification; current classificatory systems: DSM and ICD

Unit 3: Developmental Psychology

- Child and developmental psychology: definition and scope; meaning of growth, development and maturation; principles and stages of development
- Motor development – definition, principles, importance; stages in motor development: early motor development, development during later childhood and adolescence, decline with age; handedness
- Cognitive development – Piaget's theory of cognitive development; intelligence – evolutionary development and development from early childhood to adolescence, decline with age
- Emotional development – components of emotions, characteristics of emotional behaviors, beginning and development of emotional behavior and patterns, emotional changes through the life span
- Social development – definition of social development, meaning of socialization, pattern of social development, development and characteristics of social behavior, and factors influencing it

Unit 4: Principles of Learning and Behavior Modification

- Learning – definition and characteristics; theories of learning: introduction and types (S-R theories, cognitive theories, mixed theories); Pavlov's classical conditioning

- Basic principles of learning – acquisition of CR, extinction of CR, second order and higher order conditioning, generalization and discrimination; additional principles: experimental neurosis, counter conditioning, cerebral conditioning

- Skinner's operant conditioning – basics; principles of operant conditioning: acquisition, elimination, maintenance of responses, operant generalization and discrimination; factors influencing operant conditioning; application of operant learning principles

- Behavioral assessment and diagnosis – problem behavior assessment and skill behavior assessment

- Therapeutic techniques based on learning principles – skill behavior management, problem behavior management

Unit 5: Neuropsychology and Counseling

- Neuropsychology – scope; neuropsychological tests and assessment

- Neuropsychological management – theories and types of neuropsychological rehabilitation

- Application of neuropsychology in the field of speech and hearing

- Counseling – differences and similarities between guidance, counseling, and psychotherapy

- Types of counseling – directive, non-directive, and eclectic counseling

- Characteristics of a good counselor; do's and don'ts in counseling

Optional Minor 2

- Each participating institution can offer any of the following as minor optional. However, a course once offered cannot be repeated for the same batch.

- The institution itself can draw the syllabus for the course.

a) Developmental Pediatrics
b) Genetics
c) Counseling and Guidance
d) Basics of Sign Language
e) Community-Based Rehabilitation (CBR)
f) Dysphagia
g) Auditory Habilitation
h) Vestibular Disorders
i) Disability Certification
j) ASLP in Practice
k) Augmentative and Alternative Communication (AAC)
l) Telerehabilitation

Clinicals in Speech-Language Pathology

General Considerations

- Clinical work should be primarily linked to the theory courses of the semester.

- After completion of clinical postings in Speech–language diagnostics, the student will have the concepts (know), ability to apply (know how), demonstrate skills (a clinical diary/logbook based on clinical reports/recordings) (show), and carry out the following on patient/client contact (do):

Know

- Procedures to obtain a speech language sample for speech and language assessment from children of different age groups such as preschoolers, primary school and older age groups.

- Methods to examine the structures of the oral cavity/organs of speech.

- The tools to assess language impairment in children (with hearing impairment, specific language impairment, intellectual disabilities, autism spectrum disorders).

- Document test materials (Indian/Western) used in the assessment of child language disorders.

Know-how

- Evaluate speech and language components using informal assessment methods.

- Administer at least two standard tests for childhood language disorders.

- Differentially diagnose SLI, ASD, ADHD, and IDD.

- Evaluate speech and language characteristics of childhood aphasia using available test tools.

Show

- Demonstrate how to perform a detailed interview of children with language disorders and their parents.

- Evaluate the speech and language skills of children with delay in speech and language development using standardized test material.

- Diagnose ADHD and ASD using a standardized test tool.

- Diagnose learning disability using an available screening/diagnostic tool.

- Demonstrate speech-language stimulation techniques and other approaches used for management of child language disorders and discuss their clinical applications.

- Use at least one evidence-based intervention approach/technique (including speech and language stimulation techniques) used for the treatment of children with language disorders in your therapy session and document the outcome.

- Record a conversation sample of toddler (2–3 years), preschool (3–5 years), and school-age (5–6 years) children. Perform a language transcription and analyze for form, content, and use.

- Record mother-child interaction of typically developing children of different age groups. Compare linguistically the outputs from mother and child across the age groups. Make inferences on the socio-cultural influences in these interactions.

- Make a list of loan words in 2 familiar languages based on interaction with typically developing children from 2 to 10 years. Discuss the influence of bilingualism or multilingualism on vocabulary.

- Assessment of pre-linguistic skills – minimum of two children.

Do

- Case history – minimum of three children with speech and language disorders.

- Oral peripheral examination – minimum of three children.

- Language evaluation report – minimum of three children.

- Evaluate children and adults with fluency disorders using protocol at your department/institute and document the same.

- Plan and take therapy for children and adults with fluency disorders.

- Plan and take therapy for children with language disorder.

- Plan and prepare a low-tech AAC device for children with language disorder.

Clinicals in Audiology

General Consideration

- Clinical work should be primarily linked to the theory courses of the semester.

- After completion of clinical postings in Speech–language diagnostics, the student will have the concepts (know), ability to apply (know how), demonstrate skills (a

clinical diary/logbook based on clinical reports/recordings) (show), and carry out the following on patient/client contact (do):

Know

- Indications to administer special tests
- Protocols for screening and diagnostic otoacoustic emissions (OAEs) and their interpretation
- Characteristics of a good diagnostic and screening test
- Role of various tests in the test battery

Know-how

- Administration of at least one test for adaptation, recruitment, and functional hearing loss
- Administration of speech audiometry using various test materials in open set and closed set modes
- Knowledge to change the protocol for OAEs according to specific cases

Show

- Ability to perform tests for identifying recruitment and adaptation
- Skills to record and interpret OAEs
- Skills to counsel clients with functional hearing loss, cochlear, and retrocochlear pathology based on test findings

Do

- Perform tone decay test on 2 individuals with sensorineural hearing loss
- Administer tests for recruitment (SISI, ABLB, MLB) on 2 individuals with sensorineural hearing loss
- Obtain PIPB function for 5 persons with normal hearing and 2 persons with hearing loss

- Administer tests of functional hearing loss (Stenger test, Lombard test, Doerfler-Stewart test) on 2 individuals

- Record OAEs (TEOAEs and DPOAEs) on 5 persons with normal hearing and 5 persons with hearing loss

Semester 4

Structural Anomalies and Speech Sound Disorders

Objectives

After completing the course, the students would be able to:

- Trace out normal speech sound development and classify speech sound disorders

- Perform phonological analysis and assessment of speech sound disorders

- Plan intervention for individuals with speech sound disorders

- Identify the types of clefts, assess and manage speech sound errors and feeding difficulties in individuals with cleft lip and palate

- Identify the structural disorders of the tongue, jaws and explain their associated problems after glossectomy and mandibulectomy

- Advise parents on feeding-related issues in children with cleft lip and palate

Unit 1: Speech Sound Development and its Disorders

- Speech sound acquisition, phonology & theories of phonological development

- Fundamentals of articulatory phonetics – phonetic description of vowels and consonants, distinctive features, acoustic theory of speech production, acoustic characteristics of vowels and consonants, coarticulation

- Speech sound disorders – terminologies, incidence and prevalence, causes, classification

- Factors related to speech sound disorders – cognitive-linguistic, psychosocial, metalinguistic, oral stereognosis, and associated problems

Unit 2: Phonological Analysis and Assessment of Speech Sound Disorders

- Speech sound sampling and other procedures for phonological analysis, transcription
- OPME, analysis of speech sound errors
- Screening tools, diagnostic tests and assessment of speech intelligibility, speech sound discrimination, test battery
- Determining need for intervention, prognosis and factors influencing target selection

Unit 3: Management of Speech Sound Disorders

- Basic principles and stages in therapy – target selection, treatment continuum: establishment, maintenance, generalization, and stabilization
- Therapy approaches – traditional, motor-based and cognitive-linguistic-based therapy approaches, evidence-based approaches and models
- Use of technology for SSD intervention
- Adapting approaches to individuals from culturally and linguistically diverse backgrounds; role of family in intervention

Unit 4: Speech Characteristics, Assessment and Management of Cleft Lip and Palate Speech

- Types, characteristics and classification of cleft lip and palate; causes: genetic, syndromic, and others
- Velopharyngeal inadequacy – types, causes and classification; associated problems: speech, language, feeding, dental/occlusion, hearing, psychological

- Team approach, assessment of cleft speech – subjective and objective assessment, speech intelligibility, resonance and articulatory features, reporting using Universal Parameters

- Management of cleft lip and palate – surgical and prosthetic management; strategies to correct speech sound disorders and improve feeding; counseling and guidance

Unit 5: Structural Anomalies of Tongue and Mandible – Characteristics, Assessment and Management

- Types, classification and characteristics of structural anomalies of tongue and mandible; causes

- Associated problems – speech, feeding, dental and occlusion, psychological and others

- Team of professionals in assessment and management – roles and responsibilities

- Management – surgical and prosthetic management; strategies to improve speech intelligibility and feeding; counseling and guidance

Practical Tests

- Identify the stages of speech sound acquisition by observing videos of children from birth to 5 years of age

- List the vowels and consonants in your primary language and provide phonetic and acoustic descriptions for the speech sounds

- Identify the vowels and consonants of your language on the IPA chart and practice the IPA symbols by transcribing words and running speech

- Record the speech of one typically developing child from 1–8 years of age (include single word and connected speech samples), transcribe the sample, and perform phonological assessment

- Collect 3 audio/video samples of speech sound disorders and analyse the errors

- Make a list of minimal pairs in English and in any other language (mother tongue)

- Practice instructions for phonetic placement of selected sounds
- Develop a home plan with activities for any one speech sound error/phonological error using therapy techniques
- Collect therapy samples (pre- and post-therapy) of speech sound disorder and analyse them
- Identify the different types of cleft lip and palate by viewing illustrations and images, and represent the types using striped “Y” classification
- Listen to 10 speech samples of children with cleft lip and palate and rate their nasality/speech (articulation and cleft-type errors) based on universal reporting parameters
- Identify the type of closure of the velopharyngeal port in 5 normal individuals and 5 individuals with cleft lip and palate using videos of nasoendoscopy/videofluoroscopy
- Perform oral peripheral mechanism examination on 10 individuals (5 adults and 5 children) and document the structure and functions of the articulators
- Analyse the different types of occlusions in 10 individuals
- Identify the type of glossectomy by viewing pictures/illustrations and identify the different types of prosthesis used in the management of mandibulectomy

Diagnostic Audiology- Advanced

Objectives:

After completing this course, the student will be able to:

- Explain the concept of immittance and its clinical implications
- Perform immittance evaluation
- Describe the various auditory evoked potentials and record them
- Explain central auditory processing and conduct tests to assess the same
- Assess tinnitus and hyperacusis

- Carry out screening for vestibular disorders

Unit 1: Immittance Evaluation

- Principle of immittance evaluation: Concept of impedance, admittance and their components
- Tympanometry: Definition, measurement procedure, response parameters, their measurement and normative values, classification of tympanogram, clinical significance of tympanometry
- Eustachian tube functioning tests in tympanometry: Principle and tests such as Valsalva, Toynbee, William's pressure swallow, inflation-deflation test
- Overview of multicomponent and multi-frequency tympanometry, wide band reflectance and wide band tympanometry
- Reflexometry: Definition, acoustic reflex pathway, measurement procedure, clinical applications of acoustic reflexes, special tests

Unit 2: Auditory Evoked Potentials (AEPs): Auditory Brainstem

- Introduction and classification of AEPs
- Instrumentation and principles of AEP recording techniques
- Auditory brainstem response generators
- Protocol and procedure for recording auditory brainstem responses
- Factors affecting auditory brainstem responses
- Clinical applications of ABR

Unit 3: Overview of Other AEPs and Their Clinical Applications

- Electrocochleography (ECochG)
- Auditory Middle Latency Responses (AMLR)
- Auditory Long Latency Responses (Obligatory responses)

- Other long latency potentials: P300, MMN, P600, N400, T-complex, CNV
- Auditory Steady State Responses (ASSR)
- Brainstem responses to speech and other complex signals

Unit 4: Assessment of Central Auditory Processing Disorder (CAPD)

- Definition of CAPD, processes involved in auditory processing
- Behavioral and clinical indicators of central auditory processing disorders
- Principles and rationale of tests to identify CAPD (concept of redundancy, bottleneck, and subtlety principles)
- Monaural low redundancy tests, dichotic speech tests, binaural interaction tests, tests of temporal processing, testing of binaural integration and binaural separation
- Interpretation of CAPD assessment tests (site of lesion, processes involved), team involved in assessment and management

Unit 5: Tests to Diagnose Other Disorders: Tinnitus, Hyperacusis and Vestibular Disorders

- Overview of other systems involved in balance, vestibulo-ocular reflex and vestibulo-spinal reflex
- Signs and symptoms of vestibular disorders, team involved in assessment and management
- Screening procedures for vestibular disorders
- Overview of tests for tinnitus: Pitch matching, loudness matching, residual inhibition, Feldman masking curves
- Assessment of hyperacusis and related disorders – questionnaires, Johnson Hyperacusis Dynamic Range Quotient

Practical Tests

- Measure admittance in the calibration cavities of various volumes and note down the observations

- Calculate Equivalent Ear Canal Volume by measuring static admittance in an uncompensated tympanogram (10 ears)

- Do tympanogram in the manual mode and measure peak pressure, peak admittance, and ear canal volume manually using cursor (10 ears)

- Measure gradient of the tympanogram (10 ears)

- Administer Valsalva, Toynbee, and William's pressure swallow test (5 ears)

- Record acoustic reflex thresholds in the ipsilateral and contralateral modes (10 ears)

- Plot Jerger box pattern for various hypothetical conditions that affect acoustic reflexes and interpret the pattern and corresponding condition

- Carry out Acoustic Reflex Decay Test on 5 individuals

- Trace threshold of ABR (in 5 dB nHL steps near the threshold) for clicks and tone bursts of different frequencies (2 persons) and draw latency intensity function

- Record ABR using single versus dual channels and note down the differences

- Record ABR at different repetition rates in 10/sec steps beginning with 10.1 or 11.1 per second, and draw a latency-repetition rate function

- Record with each of three transducers (headphones, insert phones, and bone vibrator) and polarities, and draw a comparative table; record again without changing protocol to calculate correction factor

- Record ASSR for stimuli of different frequencies and estimate the thresholds

- Administer CAPD test battery to assess different processes on 3 individuals and note down the scores

- Administer Fukuda stepping test, Tandem gait test, Finger-nose pointing, Romberg test, Sharpened Romberg test, Dix-Hallpike test, and Log-roll test on 5 individuals each and note down observations

- Estimate the pitch and loudness of tinnitus in 2 persons with tinnitus (under supervision) and assess the residual inhibition
- Plot Feldman masking curves for a hypothetical case
- Administer Johnson Hyperacusis Dynamic Range Quotient on any 2 individuals and note down the scores
- Administer Tinnitus Handicap Inventory on 2 patients

Neurology

Objectives

After completing this course, the student will be able to understand:

- The basic concepts, functional anatomy, and physiology of the nervous system related to speech and hearing
- Neural organization – different structures and functions of various systems
- Neurosensory and neuromotor controls in speech, language, and hearing mechanisms
- Cerebral plasticity and dominance and its relevance for speech, language, and hearing disorders
- Various neural diseases, lesions, nutritional and metabolic conditions affecting speech, language, and hearing
- Basic principles and assessment procedures used in speech, language, and hearing disorders associated with neurological conditions
- Basic principles and management procedures used in speech, language, and hearing disorders associated with neurological conditions

Unit 1: Functional Anatomy of the Nervous System

- General introduction to basic neurological concepts
- Organization of the neural system

- Central, peripheral, and autonomic nervous systems
- Neural structures – applied anatomy and physiology
- Cranial nerves important for speech, language, hearing, and balance
- Cerebral blood supply, nourishment, and protection of the brain
- General principles of neural organization
- Transmission of information in the neural system – nerve fibers, synaptic transmission, action potential, chemical transmission, excitatory and inhibitory potential, and neuromuscular transmission
- Cerebral plasticity and development of neural plasticity and cerebral dominance

Unit 2: Neurophysiology of Speech and Hearing Processes

- Neurosensory organization of speech and hearing
- Central auditory nervous system
- Anatomy of oral sensation and oral sensory receptors
- Neuromotor control of speech
- Pyramidal and extrapyramidal systems, basal ganglia, and cerebellar system
- Lower and upper motor neurons, alpha and gamma motor neurons
- Sensory and motor examination, oral, peripheral, and other reflexes
- Swallowing mechanism and neural control
- Screening and bedside neurological examination

Unit 3: Neural Disorders Associated with Speech and Hearing Disorders – I

- Neural infections – meningitis, encephalitis
- Developmental anomalies – spinal cord defects, syringomyelia, Arnold Chiari malformations
- Hydrocephalus – source and circulation of CSF, types, and etiopathogenesis

- Upper motor neuron (UMN) lesions – spastic dysarthria
- Lower motor neuron (LMN) lesions – flaccid dysarthria
- Mixed lesions
- Extrapyramidal lesions – dyskinetic dysarthria
- Cerebellar and cerebellar pathway lesions – ataxic dysarthria
- Other diverse lesions and dysarthria

Unit 4: Neural Disorders Associated with Speech and Hearing Disorders – II

- Cerebrovascular diseases – ischemic brain damage, hypoxic-ischemic encephalopathy, cerebral infarction, intracranial hemorrhage
- Trauma to the CNS – subdural hematoma, epidural hematoma, parenchymal brain damage
- Demyelinating diseases – multiple sclerosis, perivenous encephalomyelitis, dementia
- Degenerative, metabolic, and nutritional disorders – Alzheimer's disease, Parkinsonism
- Metabolic, hereditary, acquired, and neuronal storage disorders
- Wilson's disease, Phenylketonuria
- Nutritional disorders – Wernicke's encephalopathy, pellagra
- Alcoholic cerebellar degeneration
- Clinical-pathological methods and neuroimaging
- Tumors of the CNS – gliomas, embryonal tumors, meninges, metastasis, malignant tumors

Unit 5: Speech-Language and Swallowing Disorders

- Central language mechanisms and their disorders
- Developmental motor speech disorders – cerebral palsy, muscular dystrophy

- Neurological disorders with primitive reflexes – diagnosis and management
- Clinical neurological syndromes associated with speech and language disorders
- Childhood language disorders associated with neurologic disorders
- Dysphagia in neurogenic disorders – assessment of mastication and deglutition
- Agnosia and other conditions associated with speech and hearing disorders
- Cognitive disorders associated with neurologic disorders
- General management principles and options for childhood neurogenic speech, language, and hearing disorders
- General management principles and options for adult neurogenic speech, language, and hearing disorders

Research Methods and Statistics

Objectives

After completing this course, the student will:

- Understand the nature and importance of research in the field of audiology and speech-language pathology
- Be exposed to the basics of design and execution of research
- Learn the basic statistical tools
- Understand the ethical guidelines for conducting research on humans

Unit 1: Introduction to Research Methods

- Meaning and purpose of research
- Need for research in audiology and speech-language pathology
- Funds and grants for research
- Steps in research: identification and selection

- Formulation of research questions: aims, objectives, statement of the problem, hypothesis
- Types of variables; types of sampling procedures (random and non-random)
- Types/methods of data collection and their advantages and disadvantages
- Reliability and validity (internal and external validity)

Unit 2: Research Design in Audiology and Speech-Language Pathology

- Types of research: survey, ex-post facto research, normative research, standard-group comparison
- Experimental and quasi-experimental research: group design and single-subject design
- Internal and external validity of research
- Between-groups vs. repeated-measures design
- Documentation of research: scientific report writing; different formats or styles (APA, AMA, MLA)
- Ethics of research

Unit 3: Introduction to Statistics and Data Collection

- Application of statistics in audiology and speech-language pathology
- Scales of measurement: nominal, ordinal, interval, ratio
- Classification of data: class intervals, continuous and discrete measurement
- Normal distribution: general properties of normal distribution, theory of probability
- Variants from the normal distribution: skewness and kurtosis
- Measures of central tendency: mean, median, mode
- Measures of variability: range, average deviation, standard deviation, variance

Unit 4: Statistics and Research Designs

- Choosing statistics for different research designs
- Correlational techniques: Pearson's Product Moment Correlation, Spearman's Rank Order Correlation
- Statistical inference: concept of standard error and its use; testing significance of statistical measures; z-test, t-test, ANOVA, post hoc tests
- Non-parametric tests: Chi-square test, Wilcoxon test, Mann-Whitney U test
- Reliability and validity of test scores; item analysis
- Analysis of qualitative data
- Software for statistical analysis

Unit 5: Epidemiology

- Basic epidemiologic concepts and principles
- Epidemiologic data sources and measurements
- Epidemiologic methods: questionnaire survey, screening, personal survey, testing
- Media – their advantages and disadvantages
- Incidence and prevalence of hearing, speech, and language disorders as per different census sources (NSSO, WHO)

Optional Minor 3

- Each participating institution can offer any of the following as minor optional. However, a course once offered cannot be repeated for the same batch.
- The institution itself can draw the syllabus for the course.

a) Developmental Pediatrics
b) Genetics
c) Counseling and Guidance
d) Basics of Sign Language
e) Community-Based Rehabilitation (CBR)

f) Dysphagia
g) Auditory Habilitation
h) Vestibular Disorders
i) Disability Certification
j) ASLP in Practice
k) Augmentative and Alternative Communication (AAC)
l) Telerehabilitation

Clinicals in Speech-language Pathology

General Considerations

- Clinical work should be primarily linked to the theory courses of the semester.
- After completion of clinical postings in Speech–language diagnostics, the student will be able to demonstrate the following levels of clinical competency:
    - **Know** (conceptual understanding)
    - **Know-how** (application ability)
    - **Show** (demonstrate skills via clinical diary/logbook)
    - **Do** (perform in actual patient/client contact)

Know

- Document the age of acquisition of speech sounds and phonological awareness skills in different languages.
- Document the patterns of phonological processes in various languages.
- Prepare a list of feeding postures and feeding appliances (illustrations and images) used for infants with cleft lip and palate.
- Prepare a list (with images) of various types of prosthesis used in the management of cleft lip and palate.

- Document the government programs available for rehabilitation of children with cleft lip and palate.

Know-how

- Administer and interpret deep test of articulation in different languages.
- Use software/instruments used for assessment and management of speech sound disorders and structural anomalies.
- Differentially diagnose the speech characteristics of articulation disorder and phonological disorder.
- Differentially diagnose the speech of children with hearing impairment, cleft lip and palate, developmental apraxia of speech, and developmental dysarthria.
- Identify differences in the speech characteristics of children with cleft of lip, cleft of palate, cleft of lip and palate, and submucous cleft.
- Identify various compensatory and obligatory errors in recorded samples of individuals with cleft lip and palate.
- Identify the type of closure of velopharyngeal port for individuals with and without cleft lip and palate from videos of nasoendoscopy/videofluoroscopy.
- Identify the type of glossectomy from images.

Show

- Demonstrate how to perform a detailed interview for individuals with speech sound disorders.
- Demonstrate how to perform a detailed interview for individuals with structural anomalies.
- Demonstrate the procedure for oral peripheral mechanism examination. Compare the differences in typical children and children with speech sound disorders.

- Perform independent analysis (consonant-vowel inventory, syllable word shapes inventory, and syllable stress patterns inventory) of speech samples of typically developing children of different ages (2–6 years).

- Perform relational analysis of speech samples of typically developing children of different ages (2–6 years).

- Administer and interpret the results of articulation test on children with speech sound disorders.

- Record a speech sample of typically developing children in the age group: birth to 1 year, 1–2 years, 2–3 years, 3–4 years, and 5 years and document the speech sound errors and phonological processes present in them.

- Assess oral mechanism, speech sound errors, and speech intelligibility in children with speech sound errors and cleft lip and palate.

- Demonstrate phonetic placement for management of speech sound disorders.

- Demonstrate techniques for management of phonological disorders.

- Examine the oral structures of individuals with cleft lip and palate and document the structures using Modified Y-strip classification.

- Rate nasality, speech intelligibility, and document the articulatory errors from speech samples of individuals with cleft lip and palate.

- Use universal parameters to assess and document the speech characteristics of individuals with cleft lip and palate.

- Determine the acoustic characteristics of consonants and vowels using PRAAT and compare the differences in these features across these speech sounds.

Do

- Record and transcribe speech samples of children with speech sound disorders and analyse the speech characteristics.

- Prepare an oromotor kit for oral peripheral mechanism examination.

- Evaluate children and adults with child language disorders using protocol at your department/institute and document the same.
- Plan and provide speech therapy for children with speech sound disorders.
- Plan and provide speech therapy for children with cleft of lip and palate.

Clinicals in Audiology

General Considerations

- Clinical work should be primarily linked to the theory courses of the semester.
- After completion of clinical postings in Speech–language diagnostics, the student will acquire:
    - Conceptual knowledge (**Know**)
    - Application skills (**Know-how**)
    - Ability to demonstrate skills through logbooks (**Show**)
    - Ability to perform in real clinical settings (**Do**)

Know

- Types of hearing aids
- Procedures/protocols to assess listening needs
- National and international standards on electroacoustic characteristics of hearing aids

Know-how

- Skills to program digital hearing aids

- Counsel hearing aid users regarding the use and maintenance of hearing aids
- Skills to troubleshoot hearing aids
- Skills to select different types of ear molds depending on the hearing aid, client profile, and hearing loss characteristics

Show

- Perform electroacoustic measurement as per BIS standards on at least 2 hearing aids
- Demonstrate processing of 2 hard and 2 soft molds
- Demonstrate how to preselect a hearing aid based on listening needs and audiological findings in at least 5 clinical cases
- Demonstrate how to select a test battery based on case history and audiological information

Do

- Troubleshoot and fine-tune hearing aids for at least 5 older adults
- Counsel 3 hearing aid users or caregivers on use, care, and maintenance of hearing aids
- Program hearing aids for at least 5 clients
- Make earmolds for at least 3 clients
- Assess benefit from hearing aids or assistive listening devices for 5 clients

Semester 5

Voice Disorders and Laryngectomy

Objective: After completing the course, the students would be able to

- Explain the basic concepts of voice including classification of different voice disorders
- Assess and diagnose different voice disorders
- Manage voice disorders through therapy
- Assess the needs of persons with laryngectomy and plan management strategies
- Counsel persons with dysphonia and their family members

Unit 1: Basic Concepts in Voice and Its Production

- Definition and functions of voice; Parameters of voice
- Anatomy and physiology of respiratory system for phonation; Laryngeal anatomy – structural support, muscles, vocal fold microstructure, blood supply, and innervations
    - Aerodynamic myo-elastic theory of voice production
- Voice mechanics – physiologic, acoustic and aerodynamic correlates of voice
- Pitch and loudness changing mechanisms, voice registers and voice quality; Vocal tract resonance and voice quality
- Development of voice: from birth to senescence

Unit 2: Characteristics and Pathophysiology of Voice Disorders

- Definition of voice disorder, pathologies of the laryngeal mechanism: classification, incidence, and prevalence
- Aetiology of voice disorders: phonotraumatic vocal behaviours, medical etiologies, primary disorder etiologies, and personality-related etiologies
- Non-organic voice disorders: functional disorders, psychosomatic-functional aphonia, physiological phonotrauma, puberphonia
- Congenital voice disorders
- Neurological voice disorders
- Voice problems in systemic illnesses and endocrine disorders
- Voice problems in transgenders and the elderly
- Voice problems in professional voice users: teachers and singers

Unit 3: Assessment of Voice Disorders

- Referral sources, medical examination, and team approach
- Protocol for voice assessment: components and philosophies (ICF, ICD)
- Clinical voice laboratory: principles of instrumental measurements – data recording and storage; patented software and freeware
- Perceptual evaluation of voice: GRBAS, CAPE-V
- Visualization procedures: indirect laryngoscopy, video laryngoscopy, stroboscopy, high-speed imaging
- Acoustic analysis of voice: F0 measures, intensity measures, quality measures, phonetogram, DSI, non-linear analysis
- Electroglottography and inverse filtering procedures
- Aerodynamic analysis of voice

- Self-evaluation tools: PROM, VHI, V-DOP, VFI
- Reporting voice findings, normative comparisons, differential diagnosis

Unit 4: Management of Voice Disorders

- Voice therapy orientation: principles, goal setting, and approaches
- Vocal hygiene and preventive counselling
- Symptomatic voice therapy
- Psychological approaches to voice therapy
- Physiological approach
- Holistic voice therapy approaches
- Eclectic voice therapy approach
- Medical and surgical treatment for voice disorders; post-operative care
- Professional voice care

Unit 5: Laryngectomy

- Causes, symptoms, and classification of laryngeal cancers
- Multidisciplinary team in managing persons with laryngeal cancer
- Surgery for laryngeal cancers: types and outcomes
- Assessment of speech and communication in laryngectomees: pre- and post-operative considerations
- Esophageal speech: candidacy, air intake procedures, speech characteristics, complications, contraindications

- Tracheoesophageal speech: candidacy, types of TEP, prosthesis fitting, speech characteristics, complications, contraindications

- Artificial larynx: types, selection factors, output characteristics, usage techniques, complications, contraindications

- Other remedial procedures: pharyngeal speech, buccal speech, ASAI speech, gastric speech

Practicum

- Identify and label the structures of the larynx on a chart or model of the larynx. Draw the different stages of vocal fold movement to explain phonation

- Record phonation and speaking samples (counting numbers) from five children, adult men, adult women, geriatric men, and geriatric women. Note recording parameters and differences in the samples

- Make inferences on age and sex differences across the samples obtained in the previous experiment using perceptual voice profiling. Note differences in pitch, loudness, quality, and voice control

- Perform an acoustic voice analysis on five abnormal voice samples and generate a voice report based on acoustic findings

- Perform MPT and s/z ratio. Infer differences across age and sex

- Perform spirometry. Infer differences across age and sex

- Assess five abnormal voice samples using GRBAS and CAPE-V

- Observe and document findings from five laryngeal examinations (pre-recorded stroboscopy samples)

- Administer VDOP, VFI, and VHI on five individuals

- Prepare a vocal hygiene checklist

- Demonstrate therapy techniques such as vocal function exercise, resonant voice therapy, digital manipulation, relaxation exercises, and eclectic voice therapy
- Prepare a pamphlet for post-surgical voice care for benign voice disorders and for laryngectomy
- Analyse the speech profile of five individuals with laryngectomy
- Identify parts of an artificial larynx and explore its use
- Prepare a checklist or pamphlet illustrating care of the stoma and T-tubes in vernacular

Motor Speech Disorders in Children

Objectives:

- Identify neuro-developmental processes in speech production
- Explain terminologies, classification, and characteristics of cerebral palsy and other motor speech disorders in children
- Assess motor speech disorders in children and differentiate them from other associated or related disorders
- Plan management for pediatric clinical populations with dysarthria and apraxia of speech
- Plan strategies to assess and manage feeding and swallowing problems in children

Unit 1: Neuro-developmental processes in speech production and introduction to motor speech disorders

- Development of neural pathways of speech motor control (brain maturation, reflexes, sensory and motor)

- Sensory-motor integration of speech production (spatial-temporal planning, motor planning, and feedback)

- Dysarthria in children: definition, etiology, characteristics, and associated problems including cerebral palsy types (spastic, flaccid, hyperkinetic, hypokinetic, and ataxia) and lower motor neuron syndromes

- Childhood apraxia: definition, etiology, types, and characteristics including childhood apraxia of speech and nonverbal oral apraxia

Unit 2: Assessment of motor speech disorders in children

- Case history and developmental neurological evaluation (primitive postural and oro-pharyngeal reflexes, cranial nerve and oral peripheral mechanism examination)

- Behavioral assessment of speech subsystems: respiration, phonation, articulation, speech intelligibility, comprehensibility, fluency, and prosody

- Cognitive-linguistic assessment with focus on phonetic and phonemic inventory, phonotactics, syllable sequencing, error variability, speech intelligibility, and prosody; includes formal protocols and screening tests for childhood apraxia of speech in Indian languages

- Differential diagnosis between childhood dysarthria, childhood apraxia of speech, and other developmental disorders

Unit 3: Management of childhood dysarthria

- Team approach to rehabilitation of motor speech disorders in children

- Behavioral management of speech subsystems: respiratory, phonatory, resonatory, and articulatory

- Prosthetic management in childhood dysarthria

- Use of augmentative and alternative communication (AAC)

- Case studies focused on intervention planning including language therapy

Unit 4: Management of childhood apraxia of speech

- Principles of motor learning
- Integral stimulation and dynamic temporal cueing
- Multisensory and tactile cueing techniques such as moto kinesthetic speech training, sensory-motor approach, PROMPTS, Touch cue method, and speech facilitation
- Gestural cueing techniques including signed target phoneme therapy, adapted cueing, cued speech, visual phonics, and Jordan's gestures
- Cognitive, conceptual, linguistic, and phonological remedial approaches including phonotactics
- Other methods like melodic intonation therapy, multiple phonemic approaches, instrumental feedback, vowel and diphthong remediation, and Nancy Kauffman's speech praxis treatment kit
- Use of AAC in childhood apraxia management
- Case studies for intervention planning

Unit 5: Feeding and swallowing disorders in children

- Phases of swallowing, neural control, and related reflexes
- Causes, signs, and symptoms of dysphagia in children
- Assessment methods including neural developmental assessment, cranial nerve examination, oral peripheral mechanism exam, clinical swallow examination, nutritive and non-nutritive assessment, and instrumental assessments
- Treatment approaches including positioning, oral-motor therapy, team approach, non-oral feeding, transitional feeding, and feeding modifications

Practicum

- With the help of models, charts, and software, identify the motor control centres in the brain.
- Identify and list the characteristics of types of dysarthria in children (spastic, flaccid, athetoid, and ataxia).
- Identify and list the characteristics from the speech and language sample of a child with childhood apraxia of speech.
- Perform oro-motor examination in five children and adults and compare results.
- Demonstrate normal posture and breathing patterns required for varied speech tasks; alter the postures and breathing patterns and notice changes in speech patterns.
- Assess the Diadochokinetic (DDK) rate in five typically developing children.
- Rate intelligibility of speech in five typically developing children; discuss factors influencing speech intelligibility and their ratings.
- Observe and record physical status, oral sensory motor abilities and vegetative skills, respiration, phonation, resonation, articulation, and language abilities in five typically developing children; compare these with children having motor speech disorders.
- Perform oro-motor exercises – isotonic and isometric; discuss strategies to modify exercises for children.
- Identify the symbols and types of Augmentative and Alternative Communication (AAC) systems.
- Design a low-tech AAC system for children with motor speech disorders.
- List various multisensory and tactile cueing techniques used for children with apraxia of speech.
- Identify from video and list various prosthetic devices used in the treatment of childhood dysarthria.

- Observe and list the signs and symptoms of dysphagia in children.

- Observe feeding and swallowing skills in different age groups of children: one infant, one toddler, and one older child; identify differences in feeding methods, food consistencies, food texture, and quantity used.

Paediatric Audiology

Objectives: After completing this course, the student will be able to

- trace out auditory development in children

- describe embryological development of the auditory system

- justify, plan and execute programs for early identification of hearing loss in infants and children

- administer appropriate test battery (behavioral and physiological tests) for diagnosis of hearing loss in infants and children

- modify the test protocols/procedures, as appropriate, while testing difficult-to-test population

Unit 1: Development of Auditory System

- Overview of paediatric audiology and fundamental terminology

- Embryological development of auditory system and its relevance to clinical audiology

- Maturation of the auditory system and neuroplasticity

- Development of auditory behaviour: prenatal hearing, newborn hearing, hearing in infants and toddlers

Unit 2: Early Identification of Hearing Loss

- Incidence and prevalence of auditory disorders in children
- Principles of early hearing detection and intervention
- Need for early identification with reference to congenital versus acquired hearing loss, conductive and sensorineural hearing loss, mild hearing losses, sloping hearing losses, fluctuating hearing losses and unilateral hearing loss
- Recommendations of the Joint Committee on Infant Screening - various position statements and the evolution
- High risk registers and their utilities in screening, sensitivity and specificity of high risk registers, relevance in Indian scenario

Unit 3: Paediatric Hearing Screening

- Behavioral screening tests (behavioral observation audiometry), procedures, recording of response, interpretation of results
- Objective screening tests (e.g., Cribogram, auditory cradle, reflex inhibition audiometry, immittance, reflexometry, wide-band reflectance, OAE, evoked potentials - AABR)
- Universal newborn hearing screening - concept, history, Indian and global scenario and challenges
- Hearing screening in infants and toddlers: Indian and global context
- Hearing screening in pre-schoolers and school-age children: Indian and global context

Unit 4: Assessment of Hearing Loss in Children

- Behavioural assessment of hearing: behavioural observation audiometry, conditioned orientation reflex audiometry, visual reinforcement audiometry and its modifications, conditioned play audiometry
- Speech audiometry in children, material available, modifications required

- Physiological assessment of hearing: immittance evaluation including high frequency probe-tone tympanometry, reflexometry, wide-band reflectance, otoacoustic emissions, auditory brainstem response, auditory steady state responses and other evoked potentials

- Test battery for diagnosing severity and type of hearing loss (conductive, cochlear pathology, auditory neuropathy spectrum disorder), factors affecting assessment of hearing in children

- Counseling parents/caregivers regarding diagnosis and management of children with hearing loss

Unit 5: Assessment of Special Population

- Diagnosis of auditory neuropathy spectrum disorder

- Assessment of hearing children with multiple problems (additional needs)

- Assessment of central auditory processing in children

- Assessment of functional hearing loss in children

- Assessment of vestibular problems in children

- Assessment of tinnitus, hyperacusis and misophonia in children

Practicum

- Observe infants with typical hearing abilities in the age range of 0-1 years and 1-2 years in their natural environments. Generate a report detailing their response to auditory stimuli.

- Monitor a child with hearing impairment within the age range of 0-2 years in natural setting. Compile a report describing the child's responses to auditory stimuli both with and without the amplification device.

- Administer HRR on at least three newborns and interpret responses.

- Administer BOA and VRA on 5 children with typical hearing and 2 children with hearing impairment. Write a report detailing the instrumentation, procedure and

interpretation.

- Carry out immittance evaluation on 5 children with typical hearing and 2 children with hearing impairment and interpret the results.

- Record OAE on 5 children with normal hearing and 2 children with hearing loss and interpret the results.

- Compare ABR waveforms of children across different age groups, ranging from birth to 24 months.

- Record ABR on 5 children with typical hearing and observe ABR of 2 children with hearing impairment. Write a report detailing the instrumentation, instructions, stimuli used, procedure and interpretation.

- Employ role play to illustrate how the outcomes of audiological assessments are communicated to caregivers for children with the following conditions:

    - A child referred for hearing screening with history of high-risk factors

    - A child with chronic middle ear disease

    - A child with central auditory processing disorder (CAPD)

    - A child with severe bilateral hearing impairment

Aural Rehabilitation

Objectives: After completing this course the student will be able to

- Describe the different communication options available for young children with hearing impairment

- Explain the impact of hearing impairment on auditory development, spoken language communication and quality of life

- Describe factors that affect acoustic accessibility and strategies to manage them at home, classroom and work environments

- Identify components of aural rehabilitation program for adults and administer different tools for assessment of hearing handicap, attitudes and beliefs that can impact aural rehabilitation

- Design activities for auditory training at different levels for children and adults

Unit 1: Listening, spoken communication and acoustic accessibility

- Sensitivity period for auditory development

- Impact of hearing impairment on auditory development, spoken language acquisition, parent-child communication

- Psychological impact of hearing loss

- Impact of hearing loss on quality of life, education, employment and financial burden

- Hearing loss implications for speech perception: acoustics of speech

- Optimizing hearing potential through hearing devices in adults and children

- Barriers to acoustic accessibility: distance, signal to noise ratio, reverberation

- Signal to noise ratio enhancing technologies: personal FM, loop systems, desktop group systems, Bluetooth connectivity

Unit 2: Communication and Education options for children with hearing loss

- Parent/caregiver support counseling

- Choosing communication options: Manual vs. oral form of communication

- Different manual communication systems available

- Cued speech and total communication

- Educational placement of hearing impaired children: preschool training, integration, partial integration, segregation; day school vs. residential school,

inclusive vs. integrated school

- Educational problems of individuals with hearing impairment and measures taken to overcome them in India
- Early intervention programs

Unit 3: Auditory learning

- Terminology and historical background: auditory learning, auditory training, auditory verbal therapy
- Creating optimum listening and learning environment for children at home, classroom, and for adults at work
- Factors affecting outcome of auditory learning
- Methods of learning spoken language through listening (auditory oral vs auditory verbal)
- Methods of auditory training in children and adults
- Computer/App based modules for auditory training
- Unisensory vs multisensory approaches

Unit 4: Speech Reading and communication strategies

- Definition and need
- Visibility of speech sounds and assessing auditory-visual perception and only auditory perception
- Overview of analytic and synthetic tests of speech reading for adults and children
- Analytic and synthetic methods of speech reading training in adults and children
- Factors influencing speech reading

- Facilitative communication strategies: repair strategies, anticipatory strategies, conversational styles

- Communication strategies training: formal instruction, guided learning, real-world practice

Unit 5: Managing children and adults with additional needs

- Management of hearing loss associated with additional problems such as blindness, cognitive problems

- Management of auditory neuropathy spectrum disorders

- Management of central auditory processing disorders

- Management of tinnitus and hyperacusis

- Aural rehabilitation of older adults

Practicum

- Watch documentaries such as “Sound and Fury” (2001). Write a reflection of why parents made communication choices for their children

- Follow on links to the above film that shows the status of the children with hearing impairment after a few years

- Learn at least 50 signs across different categories of Indian sign language. Make a video of you signing 10 sentences. Have a classmate interpret them

- Interview a parent of a child with hearing impairment on how they adapted their child to wear the hearing aids and/or implant. What were the first responses to sound they observed and how language and speech develop?

- Complete a functional auditory evaluation on one child with hearing loss. Do a speech and language evaluation and also write a report on the child’s strengths and weaknesses

- Design and demonstrate auditory learning activities at the four levels: awareness, discrimination, identification and comprehension. Ensure that the activities encompass different skill levels and difficulty levels

- Develop a short audio/film/pamphlet for parents in your local language on one of the following: teaching parents to troubleshoot the hearing aid/cochlear implant, establishing consistent use of listening device, activities to facilitate language across different age groups

Optional Minor 4

- Each participating institution can offer any of the following as minor optional. However, a course once offered cannot be repeated for the same batch.

- The institution itself can draw the syllabus for the course.

a) Developmental Pediatrics
b) Genetics
c) Counseling and Guidance
d) Basics of Sign Language
e) Community-Based Rehabilitation (CBR)
f) Dysphagia
g) Auditory Habilitation
h) Vestibular Disorders
i) Disability Certification
j) ASLP in Practice
k) Augmentative and Alternative Communication (AAC)
l) Telerehabilitation

Clinicals in Speech-Language Pathology

General Considerations

- Clinical work should be primarily linked to the theory courses of the semester.

- After completion of clinical postings in Speech–language diagnostics, the student will have the concepts (know), ability to apply (know how), demonstrate skills (a clinical diary/logbook based on clinical reports/recordings) (show) and carry out

the following on patients/client contact (do):

Know

- Different samples/procedures required to analyze voice production mechanism (acoustic/aerodynamic methods/visual examination of larynx/self-evaluation)
- Assess parameters of voice and breathing for speech
- Document the voice production mechanism in different animals and birds and compare with human voice production
- Different samples/procedures required to analyze speech production mechanism in children with motor speech disorders
- Differential diagnosis of motor speech disorders in children
- Procedures to assess laryngectomees and provide management options
- Document the voice production mechanism in different animals and birds and compare with human voice production

Know-how

- To assess posture and breathing for speech in children with motor speech disorders
- To record a voice sample for acoustic and perceptual analysis
- To assess speech parameters of different types of speech in laryngectomee
- To consult with inter-disciplinary medical/rehabilitation team and counsel the individual/family regarding management options and prognosis
- Observe and document findings from pre-recorded/live samples of laryngeal examination and compare differences across various voice disorders

- Use software/instruments used in assessment and management of voice disorders

- Identify various types of voice prostheses, tracheostomy tubes, artificial larynx and its parts; document use in various disorders

Show

- Perceptually analyse paediatric, adult, and geriatric voice using standard test tools; compare differences across age and gender

- Perform aerodynamic analysis (spirometry, MPD, s/z ratio) of voices across age groups and compare

- Perform acoustic analysis using software/instruments and compare differences across age and gender

- Analyse voice using electroglottography (EGG) and compare differences across age and gender

- Evaluate voice disorders using perceptual, acoustic, aerodynamic analyses and EGG; compare across age, gender, and disorder types

- Administer and document findings of quality-of-life questionnaires/PROM on individuals with voice disorders

- Assess voice of at least one professional voice user; describe differences in procedure between PVU and non-PVU

- Prepare vocal hygiene checklist for individuals with voice disorders

- Prepare vocal hygiene checklist for different professional voice users (singers, teachers, drama artists) and understand differences

- Counsel patients with voice disorders

- Demonstrate voice therapy techniques and document them

- Analyze speech profile of two individuals with laryngectomy

- Prepare checklist/pamphlet illustrating care of stoma, T tubes, prostheses used by laryngectomees
- Perform OPME in 5 children with motor speech disorders
- Check oral motor reflexes in infants with typical development and motor speech disorders; document any differences
- Evaluate posture, respiration, phonation, resonation, DDK, articulation, language, speech intelligibility in children with motor speech disorders and compare with typically developing children
- Prepare developmental chart for feeding skills from birth to 3 years
- Observe feeding and swallowing skills in newborns, infants, toddlers, older children; identify differences in feeding methods, consistencies, textures, quantity, habits, appliances
- Evaluate feeding skills in children with motor speech disorders and prepare plan of action for improvement

Do

- Write baseline report for individual with voice disorder
- Write lesson plan for individual with voice disorder
- Evaluate children and adults with speech sound disorders using departmental protocol and document findings
- Plan and conduct therapy for laryngectomees
- Plan and conduct therapy for individuals with voice disorders; document differences in management across professional/non-professional voice users and disorder types

Clinicals in Audiology

General Considerations

- Clinical work should be primarily linked to the theory courses of the semester

- After completion of clinical postings in Speech–language diagnostics, the student will have concepts (know), ability to apply (know how), demonstrate skills (clinical diary/logbook), and carry out following on patient/client contact (do):

Know

- Different protocols and interpretation in tympanometry and reflexometry

- Different protocols used and interpretation in auditory brainstem responses (ABR) and ASSR

- Protocols for screening and diagnostic otoacoustic emissions (OAEs) and their interpretation

- Tests to assess vestibular system

- Different indications for selecting implantable hearing devices

- Various speech stimulation and auditory training techniques

Know-how

- Administer auditory brainstem responses and ASSR for threshold estimation and site of lesion testing

- Administer tympanometry and reflexometry

- Administer multifrequency tympanometry and calculate resonance frequency

- Administer high risk register

- Modify environment to suit needs of hearing impaired

Show

- Analyse ABR waveforms for threshold estimation (5 cases) and site of lesion (5 cases)
- Analyse immittance audiometry and relate to other tests for 5 individuals with conductive and 5 with sensorineural hearing loss
- Formulate and select appropriate auditory training techniques based on audiological evaluation

Do

- Threshold estimation on 5 infants (<2 years) and 2 adults
- TEOAE and DPOAE on 5 infants (<2 years) and 2 adults
- Immittance evaluation on 3 children and 3 adults
- BOA on 5 infants (<2 years)
- VRA on 2 infants (6 months – 3 years)
- Conditioned play audiometry on 3 children (3–6 years)
- Provide auditory training to 5 children with hearing loss
- Hearing aid fitment on 1 infant (<3 years) and 2 children (3–6 years)
- Prepare test battery report of hearing assessment for 3 children and 3 adults

Semester 6

Adult Language Disorders

Objectives (Language Disorders in Adults)

- Identify the characteristics of language disorders in adults
- Decipher the causes of language disorders in adults

- Evaluate and diagnose speech-language characteristics in adults with language disorders
- Plan strategies to manage speech-language and related errors in adults with language disorders
- Counsel and provide guidance to caregivers on management of language disorders
- Understand the concept of cognitive communication disorders in adults
- Initiate advocacy programs for adults with language disorders

Unit 1: Neurosciences of Aphasia and Other Adult Language Disorders with Cognitive Communication Disorders

- Neuroanatomical, neurophysiological, and neurochemical correlates for language function
- Neurolinguistic models and language processes: connectionist, hierarchical, global, process, and computational models
- Historical aspects of aphasia
- Language processing in the right hemisphere
- Language processing in bi/multilingual populations

Unit 2: Language Disorders in Adults

- Definitions of language disorders in adults (aphasia)
- Causes of language disorders in adults
- Different classifications of aphasia
- Types of aphasia and their speech, language, behavioral, and cognitive characteristics

- Comorbidities in individuals with aphasia
- Overview of speech-language characteristics in:
    - Traumatic Brain Injury
    - Right Hemisphere Damage
    - Dementia
    - Primary Progressive Aphasia
    - Schizophrenia
    - Metabolic disorders
    - Alcohol-induced disorders

Unit 3: Assessment of Aphasia

- Types and importance of different forms of language assessment in adults
- Types of tests and tools for language assessment in adults
- Description of tools/tests for assessment and diagnosis: WAB, BDAE, Token Test, Revised Token Test, BST, RTT, BAT, LPT (Rationale, Administration, Scoring, Interpretation)
- Tools/tests adapted or developed for Indian languages (Rationale, Administration, Scoring, Interpretation)
- Overview of tests for speech, language, cognition in adults with non-aphasic cognitive communication disorders (e.g., ACE, BTHI, MMSE, ABCD, CLAP, CLQT, CCABI, FCP)

Unit 4: Management of Language Disorders in Adults

- Principles of language intervention for individuals with aphasia

- Concept of spontaneous recovery, reorganization, and retraining
- Approaches and techniques for management of aphasia:
    - Deblocking
    - VCIU
    - LOT
    - PACE
    - Stimulation Facilitation Approach
    - RET
    - VAT
    - Semantic Feature Analysis
    - TAP
    - TUF
    - MIT
    - TWA
    - Contingency Naming Training
    - Others
- Considerations of comorbidities in planning and implementation of therapy
- Introduction to AAC for adults with aphasia
- Team approach in rehabilitation: members and roles
- Importance and role of caregivers/family in rehabilitation

Unit 5: Rehabilitation Issues Relating to Adults with Language Disorders

- Factors influencing assessment and intervention in bilingual/multilingual contexts
- Factors influencing assessment/management in preliterate, illiterate, and literate persons
- Importance of quality of life assessment for adults with language disorders
- Generalization and maintenance issues in adults with language disorders
- Recovery patterns and prognosis in adults with language disorders
- Age-related influence in adults with language disorders
- Rights of adults with language disorders

Practicum

- Identify different brain areas (cortical and subcortical) by model/image and label language areas
- List language characteristics from video samples (at least 5) and identify most likely aphasia types
- Administer case history and WAB or BDAE on two normal adults; score and interpret
- Observe administration of case history and language test for adult with stroke; score, interpret, write diagnostic report
- Demonstrate therapy techniques for aphasia management via role play
- Discuss and formulate therapy plans based on assessment reports of two persons with aphasia
- Demonstrate counseling of caregivers/family by role play for given patient profile

- Prepare awareness material (flier/video/powerpoint) on speech-language pathologist's role in aphasia rehabilitation

Motor Speech Disorders in Adults

Objectives (Motor Speech Disorders)

- Identify motor processes and control mechanisms in speech production
- Describe terminology, classification, and characteristics of motor speech disorders in adults
- Assess motor speech disorders and differentiate from related disorders
- Plan management approaches for dysarthria and apraxia of speech in adults
- Plan strategies for assessment and treatment of feeding/swallowing problems in adults
- Counsel affected individuals and family members

Unit 1: Types of Dysarthria: Anatomical Basis, Etiology, Speech Characteristics

- Speech Motor System overview
- Definition and classification of dysarthria
- Broad etiologic categories: degenerative, inflammatory, toxic-metabolic, neoplastic, traumatic, vascular diseases
- Dysarthria dimensions: age of onset, cause, course, lesion site, pathophysiology, severity, speech characteristics
- Anatomical/physiological substrates and speech characteristics of:
    - Spastic Dysarthria
    - Flaccid Dysarthria

- Hypokinetic Dysarthria
- Hyperkinetic Dysarthria
- Ataxic Dysarthria
- Mixed Dysarthria
- Unilateral Upper Motor Neuron Dysarthria

Unit 2: Assessment and Diagnosis of Dysarthria

- Behavioral assessment of speech subsystems: respiratory, phonatory, resonatory, articulatory; speech intelligibility and prosody
- Formal/standard assessment protocols
- Instrumental assessment: acoustic, kinematic, physiological
- Pros and cons of behavioral vs. instrumental assessment
- Differential diagnosis of dysarthria from apraxia of speech and aphasia
- Differential diagnosis among types of dysarthria

Unit 3: Management of Dysarthria

- Overview of medical and surgical interventions for acquired dysarthria
- Rationale and principles of behavioral intervention including motor learning principles
- Facilitative approaches: vegetative, sensorimotor, reflex-based interventions
- Behavioral management of speech subsystems including prosthesis and AAC use

- Management of respiratory, phonatory, resonatory, articulatory subsystems and prosody (rate of speech)

Unit 4: Assessment and Management of Apraxia of Speech (AOS)

- Definition and classification of acquired apraxia in adults (nonverbal and verbal/apraxia of speech)
- Anatomical and physiological substrates, etiologies
- Characteristics of nonverbal and verbal apraxia
- Behavioral assessment: tasks, observations, formal batteries/scales
- Instrumental analysis: acoustic, kinematic, physiological
- Management approaches including AAC and communication strategies

Unit 5: Dysphagia

- Neuroanatomy of swallowing
- Stages of swallowing
- Causes of dysphagia: neurogenic, mechanical, motility
- Signs and symptoms of dysphagia
- Subjective and bedside evaluation of dysphagia
- Instrumental evaluation overview
- Facilitatory and compensatory treatment techniques

Practicum – Motor Speech Disorders in Adults

- Identify the cranial nerves and mention their origin and insertion in a picture or model

- Demonstrate methods to assess the cranial nerves using non-speech and speech tasks

- Perform Frenchay's Dysarthria Assessment (FDA) on any two neurotypical adults. Identify the tasks that assess different cranial nerves and subsystems of speech

- Complete a table based on different neurological disorders or etiologies of motor speech disorders. Note the pathophysiology, natural course, type of dysarthria, and other concomitant issues

- View videos of persons with various neurological conditions resulting in dysarthria and document the clinical signs and symptoms

- Identify the signs of UMN and LMN based on video samples of persons with dysarthria

- Perform assessments of the respiratory system using speech and non-speech tasks in 10 neurotypical adults

- Record different types of speech samples (sustained phonation, continuous speech, etc.) from 10 neurotypical adults and perform perceptual assessment and acoustic analysis

- Perform a complete perceptual assessment of different speech subsystems on audio/video recordings of five neurotypical adults; administer Duffy's intelligibility rating scale

- Compare perceptual assessments with recorded speech samples of persons with dysarthria

- Prepare an informal list of speech stimuli in any Indian language for speech-motor programming assessment

- Demonstrate strategies for AOS management

- Prepare a low-tech AAC for communication support in apraxia of speech or dysarthria

- Perform a clinical swallow assessment on five healthy individuals
- Demonstrate strategies for dysphagia management

Implantable Hearing Devices

Objectives

- Assess candidacy for bone conduction, middle ear, cochlear, and auditory brainstem implants
- Select appropriate device based on audiological and non-audiological findings
- Manage post-implantation audiological care
- Assess benefits derived from implantation
- Counsel caregivers at different stages of implantation

Unit 1: Need for Implantable Hearing Devices

- Verification of hearing aids: functional gain, REIG, REUR, REAR, REOR, RESR, REAG, RECD
- Use of impedance, OAEs, and AEPs in hearing aid verification
- Hearing aid validation and outcome measures including questionnaires
- Selection and verification of assistive listening devices
- Limitations of hearing aids and assistive devices
- Team involved in implantable device selection

Unit 2: Cochlear Implant and Auditory Brainstem Implants

- Types of cochlear implants (CI): components and design features

- MRI compatibility, electrode types and options
- Types of sound processors: components and features
- Bilateral vs unilateral CI, bilateral bi-modal, unilateral bi-modal CI
- Candidacy evaluation: audiological and non-audiological
- Overview of auditory brainstem implant (ABI): need and candidacy

Unit 3: Post Cochlear Implant Rehabilitation

- Overview of surgical approaches and complications
- Sound coding strategies in CI
- Objective intra-op and post-op measures: ESRT, ECAP, EABR, cortical potentials, ECochG
- CI mapping, MAP verification, and benefit assessment

Unit 4: Bone Conduction and Middle Ear Implants

- Bone conduction hearing aids vs implantable options
- Active and passive types: components and mechanisms
- Candidacy for bone conduction and middle ear implants
- Surgical considerations, risks, and techniques
- Intra-op monitoring, post-op fitting, and benefit assessment

Unit 5: Counseling, Care, and Maintenance

- Pre-implant counseling and informed consent for adults and children
- Post-implant counseling for caregivers and adult users

- Device care and maintenance practices
- Measuring outcomes of implantable devices
- Rehabilitation methods for pre-lingual and post-lingual implantees
- Team roles in implantable device rehabilitation

Practicum

- Perform real ear insertion measurements using different hearing aids (body level and ear level, hearing aids of different gains)
- Compare speech perception through conventional BTE and RIC hearing aids using a rating scale
- Watch videos of BAHA, middle ear implant, cochlear implant
- Create hypothetical cases (at least 5 different cases) who are candidates for cochlear implantation
- Make protocol for recording an EABR
- List down the technological differences across different models of cochlear implants from different companies, their cost
- Observe mapping
- Watch videos on AVT
- Watch video on cochlear implant surgery

Audiology in Practice

Objectives: After completing the course, the student will be able to

- Describe the highlights of legislations relating to hearing impairment and other disabilities

- Incorporate ethical practices in professional service delivery
- Provide information on welfare measures, government policies, and awareness strategies
- Define different clinical practice settings in audiology, including their protocols and audiologist roles
- Implement programs to measure noise and its impact on humans
- Plan strategies to address the effects of noise exposure in industries and the community
- Describe terminology, technology, and methods used in tele-practice and their application in audiological service delivery

Unit 1: Scope, Legislation and Ethics in Audiology

- Scope of practice in audiology (National – ISHA & International body – AAA)
- Professional ethics (ISHA)
- Legislations and conventions relating to disability: need and historical aspects
- Classification of hearing impairment and disability certification
- Rehabilitation Council of India Act (1992) and its amendments
- Rights of Persons with Disability Act, 1995 and 2016
- National Trust Act (1999)
- Right to Education (2012)
- Biwako Millennium Framework (2003) and Salamanca Statement 1994, UNCRPD
- National Education Policy and rights of persons with disability

- Concept of barrier-free access and universal design relating to individuals with hearing impairment

Unit 2: Hearing Health and Strategies for Prevention of Hearing Impairment

- Epidemiology of hearing disorders
- ICD and ICF
- Levels of prevention: Primary, secondary and tertiary
- National programs and efforts by national institutes
- Welfare measures by Government
- Camps (planning, purpose, organizing, and providing remedial measures)
- Public education and information (media, radio broadcasts, street plays)
- Hearing health and prevention programs (hearing helpline, Dangerous Decibels, online hearing tests etc.)

Unit 3: Audiological Practice in Different Settings

- Audiological private practice
- ENT clinics
- Pediatric / neonatology clinics or departments
- Neurology departments
- Factories and industries
- Hearing aid dispensing centers / hearing aid industry
- Rehabilitation centers such as DRC / CRCs

- Schools for the hearing impaired
- Cochlear implant clinics
- Multiple handicap habilitation centers and others

Unit 4: Noise and Hearing Conservation in Industry and Community

- Introduction to noise, types
- Sources of noise in the industry and community
- Effects of noise on the auditory system (outer, middle, and inner ear)
- Temporary threshold shift, permanent threshold shift, and risk factors for NIHL
- Non-auditory effects of noise (physiological, psychological, stress, sleep, job productivity, and accidents)
- Legislations related to noise, permissible noise exposure levels, workers' compensation, OSHA standards, Indian legislations
- Instrumentation, measurement and procedure for measuring noise in industry
- Instrumentation, measurement and procedure for measuring noise in community
- Hearing conservation program (HCP), steps, record keeping, ear protective devices

Unit 5: Scope and Practice of Tele-audiology

- Introduction to tele-health: definition, history of tele-health
- Terminologies – tele-health, tele-medicine, tele-practice
- Connectivity: internet, satellite, mobile data
- Methods of tele-practice – store and forward, and real-time

- Ethics and regulations for tele-audiology

- Requirements/technology for tele-audiology: web-based platforms, video conferencing, infrastructure, manpower at remote and audiologist ends, training assistants for tele-audiology

- Audiological screening using tele-technology: newborn hearing screening, school screening, community screening, counseling

- Diagnostic audiological services using tele-technology: video otoscopy, pure tone audiometry, speech audiometry, otoacoustic emission, tympanometry, auditory brainstem response

- Intervention / aural rehabilitation using tele-technology: hearing aid counseling and troubleshooting, tinnitus counseling, aural rehabilitation services, AVT, and counseling

Practicum

- Undertake activities such as the “Dangerous Decibels” program (www.dangerousdecibels.org)

- Perform noise measurement and attenuation measurement of ear protection devices

- Conduct sound level meter measurement in different areas (e.g., generator room, audio rooms)

- Visit an audiologist in different practice settings and provide a report

- Administer ICF protocols for patients with different disorders

- Explore websites of national institutes, hearing aid companies, and NGOs in the disability field and describe the accessibility features and information provided

- Remote control a PC-based audiology equipment connected to the internet using any authorized desktop sharing software

- Develop one pamphlet/poster in the local language addressing some aspect of audiology practice

- Evaluate the accessibility features of your institute/centre and prepare a report
- Organize at least one camp in a remote rural area

Minor Compulsory

- This is a Rehabilitation Council of India (RCI) stipulated course with modules on ethics, computers, soft skills, citizenship values, among others
- The syllabus for the course will be provided by RCI itself
- Examination is to be conducted by the participating institute, but marks shall be entered in the university marks card

Clinicals in Speech-Language Pathology

General Considerations

- Clinical work should be primarily linked to the theory courses of the semester
- After completing clinical postings in Speech–Language Diagnostics, the student will acquire the following levels of competence:

Know

- Identify cortical and subcortical language areas using brain diagrams or models
- Identify cranial nerves involved in speech and swallowing, including their origin, insertion, and function
- Prepare a table listing processes and components at different levels of speech production
- List linguistic and non-linguistic features of various types of aphasia
- Explore software used for managing motor speech and adult language disorders

- Understand procedures for assessing motor speech disorders in adults
- Differentiate types of motor speech disorders in adults
- Know assessment procedures for adult language disorders and related conditions

Know-how

- Diagnose speech and language characteristics across types of aphasia
- Distinguish between aphasia and right hemisphere damage in terms of language features
- Administer bilingual aphasia tests
- Identify signs of UMN and LMN lesions from video samples
- Use Darley, Aronson, and Brown's speech clusters to profile one adult with dysarthria
- Use MAAT-K, MANAT-K, or MAFAT-K for aphasia treatment
- Assess posture, breathing, speech, and swallowing in adults with motor speech disorders
- Record speech/language samples from adults with cognitive communication disorders
- Collaborate with medical/rehabilitation teams and counsel individuals/families on management and prognosis

Show

- Perform bedside screening for stroke, TBI, or other neurological conditions
- Conduct bedside dysphagia screening

- Assess speech in aphasia using standardized test tools
- Assess speech in motor speech disorders using standard tools (include respiration, pitch, loudness, voice quality, resonance, articulation, prosody, DDK, intelligibility)
- Evaluate cognitive-linguistic skills using screening/diagnostic tools and compare with neurotypical data
- Assess quality of life in adult language disorder using tools like SAQOL
- Demonstrate one EBP-based technique for treating aphasia
- Counsel family members of clients with aphasia/dysarthria using a prepared checklist
- Demonstrate oral motor exercises for dysarthria and outline the procedure
- Conduct dysphagia assessments for a minimum of 2 adults and 2 children
- Set therapy goals and design activities (including AAC) based on assessment findings

Do

- Design a low-tech AAC system for individuals with aphasia, apraxia, or neurogenic communication disorders
- Perform OPME, cranial nerve and reflex exams on adults with and without neurological deficits (check strength, speed, accuracy, range, steadiness, tone)
- Conduct bedside evaluations for at least 2 individuals with cognitive communication disorders
- Plan and implement therapy for motor speech disorders
- Plan and implement therapy for adult language disorders

Clinicals in Audiology

After completion of clinical postings in Audiology, the student will acquire:

Know

- National and international standards related to noise exposure
- Ability to recommend appropriate treatment options such as:
    - Speech reading
    - Auditory Verbal Therapy (AVT)
    - Combined approaches

Knowhow

- Carry out noise surveys in industry and community settings
- Perform cochlear implant mapping in infants and children using both objective and subjective procedures
- Troubleshoot cochlear implants

Show

- Analyze objective responses such as compound action potentials and stapedial reflexes on at least 3 samples
- Design and implement a comprehensive hearing conservation program in at least one situation

Do

- Perform AVT on at least 3 children with hearing impairment
- Troubleshoot and fine-tune hearing aids on at least 5 geriatric clients

- Program hearing aids for at least 5 geriatric clients and 3 children
- Conduct BOA on 5 children under 2 years
- Perform VRA on 2 children aged 6 months to 3 years
- Conduct conditioned play audiometry on 3 children aged 3 to 6 years
- Complete at least one activity for each stage of auditory training
- Carry out real ear insertion gain measurements on 5 clients
- Prepare complete audiological reports for 2 children and 2 adults with hearing loss and counsel the clients or caretakers regarding hearing loss and further recommendations

Semesters 7 and 8

Clinicals in Speech-Language Pathology

General Consideration

- Clinical internship offers exposure to varied clinical populations and diverse settings
- Students are expected to manage a larger workload and demonstrate clinical independence
- Internship promotes collaboration with allied professionals

General Clinical Competencies

- Diagnose and manage speech, language, and swallowing disorders across all ages
- Report findings, counsel patients, make referrals, and liaise with related professionals
- Plan and implement intervention and rehabilitation for communication and swallowing disorders
- Maintain clinical documentation for individuals with communication disorders

- Participate in community services such as camps, awareness programs, and community-based rehabilitation
- Gain experience in various setups and be capable of establishing speech centers
- Advise patients and families about welfare measures and resources
- Fit and recommend appropriate aids and devices
- Administer quality of life questionnaires
- Make appropriate inter-professional referrals
- Gain exposure to varied clinical settings and build capacity to set up speech-language centers

Clinicals in Audiology

Clinical Competencies in Audiology

- Screen for hearing and balance problems across all age groups
- Assess and diagnose hearing disorders
- Prepare audiological reports, counsel, and make referrals
- Plan and implement rehabilitation programs for hearing disorders
- Maintain documentation for individuals with hearing issues
- Participate in community-based services like camps and awareness drives
- Liaise with professionals from allied fields
- Gain skills to establish audiology clinics in various settings
- Advise families on welfare provisions and support
- Recommend and fit hearing aids and other devices