Objectives:
After studying this paper at the end of the year, the student should be able to understand the following –

- Characteristics and types of Fluency disorders, specify: Stuttering and Cluttering; Types of Stuttering viz developmental, Neurogenic and Psychogenic
- Theories of stuttering
- Assessment and Management

Unit 1  
(15Hrs)
- Fluency: Definition, development of fluency, factors influencing the development
- Definitions of intonation, stress and rhythm: Development of intonation, rhythm, stress – their implications to therapy
- Measures of fluency and other prosodic aspects

Unit 2  
(15Hrs)
Stuttering: definition, nature, Loci Of stuttering viz Adaptation and consistency effect
- Facts - incidence and prevalence, onset, Heredity, speech language development in individuals with stuttering, role of imitation, socio-economic status and cultural factors
- Factors which reduce stuttering and factors which increase it. Normal non fluency; primary stuttering; secondary stuttering. Development of stuttering- Van Riper’s Tracks and Peter’s and Guitar’s 5 developmental levels Cluttering and neurogenic stuttering

Unit 3  
(15Hrs)
- Theories of stuttering: organic vs. functional; cerebral dominance; diagnosogenic and learning theories; demand-capacity model

Unit 4  
(15Hrs)
- Assessment of stuttering;
- Associated problems
- Differential diagnosis of developmental stuttering, neurogenic stuttering, cluttering, normal non fluency, spasmodic dysphonia

Unit 5  
(15Hrs)
- Prevention
- Therapy; rationale; prolongation; shadowing; habit rehearsal technique, DAF, masking shock therapy, desensitization, timeout, airflow and modified airflow technique; Group therapy
- Sequence of therapy procedures VIZ -
- MIDVAS and Perkin’s Approach
- Transfer and maintenance
- Measurement of progress; naturalness rating
- Relapse and recovery
LIST OF BOOKS

Compulsory Reading:

Additional/Optional Reading:
B 3.2: NEUROGENIC LANGUAGE DISORDERS IN ADULTS

(80+20 marks) (Total = 75hrs)

Objectives:

After studying this paper at the end of the semester, the student should be able to understand the following –

- Brain and language relationship
- Aphasic and non-aphasic conditions
- Assessment and management

Unit 1 (15Hrs)

Neural bases of language: Neuroanatomical, neurophysiological and for language function

- Pathophysiology of neurological lesions affecting speech, language and hearing; concepts of recovery, reorganization and relearning
- Theoretical considerations in neurogenic language disorders: Competence Vs Performance; loss Vs Interference, Regression hypothesis, multilingualism, Unidimensional Vs multidimensional breakdown

Unit 2 (15Hrs)

- Definitions of Aphasia
- Etiology
- Classification of aphasia based on anatomical, linguistic and psycholinguistic aspects
- Clinical features: Linguistic, pyscho-social, neuro-behavioural
- Associated problems in aphasia: their definition, classification and clinical features

Unit 3 (15Hrs)

- General and specific neurological examination procedures (higher functions, cranial nerves, motor and sensory systems, reflexes and fundus)
- Neurological investigations: Electrophysiological (Electro Encephalo Gram, Evoked potentials) and imaging (Computerized Tomography, Magnetic Resonance Imaging)
- Assessment of speech, language and cognitive behaviour of adults with a language based disorder: Informal and formal test procedures( Western Aphasia Battery, Boston Diagnostic Aphasia Examination, Boston Naming Test, Minnesota Test for Differential Diagnosis of Aphasia, Porch Index of Communicative abilities, Functional Communication Profile, Token Test, Revised Token Test, Bilingual Aphasia Test and others; Indian tests

Unit 4 (15Hrs)

- Other language disorders in adults: Introduction, Etiology, clinical profile, assessment and management
  - Traumatic Brain Injury
  - Right Hemispher Damage Disorder
  - Primary Progressive Aphasia
  - Language disorders in Dementia
- Differential diagnosis of Adult Neurogenic disorders
Unit 5  

(15Hrs)

- Intervention: Prognostic indicators, Spontaneous recovery; General principles of therapy; specific techniques (Melodic Intonation therapy, Visual Action therapy, Schuell’s Auditory stimulation, Thematic language stimulation, developing functional communication and others.
- Team approach; Group therapy; Family support-preparing family, friends and colleagues on what to expect and how to deal with aphasic as a person; Counseling regarding role of family; Individual counselling and spouse and family counseling AAC

LIST OF BOOKS

Compulsory Reading:


Additional/Optional Reading:

B 3.3: MOTOR SPEECH DISORDERS

(80+20 marks)                          (Total = 75hrs)

Objectives:

After studying this paper at the end of the year, the student should be able to understand the following:

- Characteristics of motor speech disorders in children and adults
- Types of dysarthria, Apraxia (Developmental apraxia of Speech) and other conditions in children and adults
- Assessment and Management

Part A: Childhood Motor Speech Disorders   (38 Hrs)

Unit 1   (8 hrs)

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

Unit 2   (15 Hrs)

- Cerebral palsy (11 hrs)
  - Definition, causes and classification
  - Different types of Cerebral palsy: Can the titled be movement disorders
  - Disorders of muscle tone: Spasticity, rigidity, flaccidity, atonia
  - Disorders of movement: Hyperkinesias and dyskinesias- Ballismus, tremor, tic disorder, myoclon, athetosis, chorea, dystonia, hypokinesias
  - Disorders of coordination- Ataxia
  - Neuromuscular development in normals and children with cerebral palsy -
    - Reflex profile
    - Associated problems
  - Speech and language problems of children with cerebral palsy

- Syndromes with motor speech disorders (4 hrs)
  - Juvenile progressive bulbar palsy
  - Congenital supranuclear palsy
  - Guillain- Barre syndrome
  - Duchenne muscular dystrophy
Unit 3  
(6hrs)
- Assessment of speech in cerebral palsy- objective and subjective methods
- Differential diagnosis of cerebral palsy
- Management: Introduction to different approaches to neuromuscular education (Bobath, Phelps and the others); Speech rehabilitation in cerebral palsy- Verbal approaches: vegetative exercises, oral sensorimotor facilitation techniques, compensatory techniques- correction of respiratory, phonatory, resonatory and articulatory errors;
- Team approach to rehabilitation; Neurosurgical techniques for children with cerebral palsy

Unit 4  
(5hrs)
Apraxia of speech in children or developmental apraxia of speech
- Definition
- Description: verbal and non-verbal apraxia
- Differential diagnosis- dysarthria and other developmental disorders
- Management of developmental apraxia of speech- Facilitation techniques for oral motor movements, speech therapy techniques, generalization of speech

Unit 5  
(4hrs)
Definition - alternative and augmentative communication (AAC). Application of alternative and augmentative communication methods in developmental dysarthrias and developmental apraxia of speech- Symbol selection, techniques for communication, assessment for AAC candidacy, choosing an appropriate system and technique, training communication patterns, effective use of AAC

Part B: Adult Motor Speech Disorders  
(37Hrs)

DYSARTHRIA AND APRAXIA

Unit 1  
(12 hrs)
(a) Definition and classification of dysarthria in adults.
(b) Types of dysarthria in adults.
(c) Neurogenic disorders learning to dysarthria in adults.
  - Vascular disorders – dysarthria following strokes, CVA, cranial nerve palsies and peripheral nerve palsies.
  - Infection condition of the nervous system – eg. Meningitis, polyneuritis and neuro syphilis.
  - Traumatic conditions – Traumatic brain injury and dysarthria
  - Toxic conditions – dysarthria due to exogenic and endogenic causes.
  - Degenerative and demyelinating conditions – multiple sclerosis, Parkinson’s disease, motor neuron diseases, Amyotrophic lateral sclerosis.
  - Genetic conditions – Huntington’s chorea, Guillian – Barre syndrome.
  - Others leading to dysarthria – Anoxic conditions, metabolic conditions, idiopathic conditions and neoplasm.
Unit 2 (7 hrs)

d) Assessment of dysarthria

Instrumental analysis
- Physiological and Electrophysiological methods
- Acoustics
- Advantages and disadvantages of instrumental analysis of speech in dysarthria.

Perceptual analysis – measures, standard tests and methods, speech intelligibility assessment scales, advantages and disadvantages of perceptual analysis of speech in dysarthria.

e) Differential diagnosis of dysarthria from functional articulation disorders, apraxia of speech, aphasia and allied disorders.

Unit 3 (6 Hrs)

f) Management of dysarthria - Medical, surgical and prosthetic approaches - Speech therapy
- Vegetative exercises
- Oral sensori motor facilitation techniques
- Compensatory approaches – correction of respiratory, phonatory, articulatory and prosodic errors.
- Strategies to improve intelligibility of speech.

Unit 4 (7 Hrs)

g) Apraxia of speech in adults
- Definition of verbal and nonverbal apraxia of speech
- Different types, characteristics and classification
- Assessment of apraxia of speech – standard tests and scales, subjective methods and protocols
- Management of apraxia of speech – different approaches
- Improving intelligibility of speech.

Unit 5 (5 hrs)

Dysphagia:
- Definition
- Phases of normal swallow
- Etiology of swallowing disorders
- Assessment and Intervention
- Mechanical dysphagia related to glassectomy
LIST OF BOOKS

Compulsory Reading:

Additional/Optional Reading
B 3.4 REHABILITATIVE AUDIOLOGY

(80+20 marks)  
(Total = 75 hrs)

Objectives:

After studying this paper at the end of the year, the student should be able to understand the following –

• speech reading
• auditory learning
• management of individuals with additional problems
• assistive listening devices
• implantable devices

Unit 1  
(15 hrs)

1. Speech reading
   (a) Definitions
   (b) Need
   (c) Visibility of speech sounds – audio visual perception vs. visual perception
   (d) Visual perception of speech by the hard of hearing
   (e) Tests for speech reading ability, including Indian Tests
   (f) Speech reading activities

2. Factors influencing speech reading
   (a) Methods of training: analytical vs. synthetic; (including speech tracking)
   (b) Individual and group training

Unit 2  
(25 hrs)

Auditory training

(a) Definition and historical background
(b) Role of audition in speech and language development in normal children and its application in education of the hearing impaired.
(c) Factors in auditory training: motivation of the case, intelligence, age, knowledge of progress, etc.
(d) Auditory Verbal Therapy
(e) Methods of auditory training
(f) Auditory training activities
(g) Communicative strategies
(h) Individual vs. group auditory training
Unit 3
2. Management of hearing impaired individuals with special needs
   (a) Management of multi handicapped hearing impaired children (MHHI)
   (b) Management of children with central auditory processing problems
   (c) Rehabilitation of hearing impaired – elderly population

Unit 4
Assistive Listening Devices (ALDs)
- Classification based in auditory, visual & tactile stimulation
- Classification based on alerting devices Vs devices for speech perception.
- Selection of ALDs.

Unit 5
1. Implantable Devices
   - Middle Ear Implants and BAHA (Bone Anchored Hearing Aid)
   - Cochlear Implants
   - Brainstem Implants
   Components, Candidacy, Advantages and Complications for the same.
2. Utility of technology/devices in the management of tinnitus, hyperacusis.

LIST OF BOOKS

Compulsory Reading:
6. Alpiner & Mc. Carthy
   Speech reading (lipreading) Jeffers & Barley (1971)
B 3.5 NOISE MEASUREMENT AND HEARING CONSERVATION

(80+20 marks) (Total = 75 hrs)

Objectives:
After studying this paper at the end of the year, the student should be able to understand the following –

- effects of noise
- measurement of noise and vibration
- audiological findings in noise induced hearing loss
- legislations related to noise

Unit 1 (15 hrs)
a) Noise in the environment and effects of noise:
   - Definition of noise
   - Sources – community, industrial, music, traffic and others
   - Types – steady & non-steady, Impulsive/Impact, intermittent

b) Auditory effects of noise exposure
   - Historical aspects
   - TTS and recovery patterns
   - PTS
   - Histopathological changes (Metabolic, Mechanical, Biochemical, Vascular)
   - Effect of noise on communication, Speech Interference Level (SIL), Articulation Index (AI)
   - Perceived Noise in dB (PN dB), Perceived Noise Level (PNL), Effective
   - Perceived Noise Level (EPNL), Noise Criteria (NC) curves, Noise Reduction Rating (NRR), Signal to Noise Ratio (SNR)

c) Non-auditory effects of noise exposure
   - Physiological/Somatic & psychological responses, stress and health, sleep, audio-analgesia effects on CNS and other senses
   - Effects of noise on work efficiency and performance

Unit 2 (15 hrs)
Audiometry in NIHL, Puretone audiometry:
   - Base line and periodic monitoring tests, high frequency audiometry, brief tone audiometry, correction for presbyacusis
   - Instrumentation: Manual audiometer, automatic audiometer
   - Testing environment
   - High frequency audiometry, Speech audiometry:
   - Other audiological evaluations:
     - Impedance audiometry
     - ERA
     - OAE
     - Tests for susceptibility
Unit 3 (15 hrs)
Noise & vibration measurement
- Instrumentation and procedure for indoor and outdoor measurement of ambient noise, traffic noise, aircraft noise, community noise and industrial noise.
- Calibration: Biological and instrumental for AC & BC transducers.

Unit 4 (15 hrs)
Hearing conservation:

- Need for hearing conservation program, steps in hearing conservation program.
- Ear protective devices: (EPDs) Types: Ear plugs, ear muffs, helmets, special hearing protectors, merits and demerits of each. Properties of EPDs: Attenuation, comfort, durability, stability, temperature, tolerance. Evaluation of attenuation characteristics of EPDs. Toughening.

Unit 5 (15 hrs)
Legislations related to noise:
- Damage Risk Criteria (DRC) – definition, historical aspects, use of TTS and PTS, information in establishing DRC, - Committee on Hearing Bioacoustics & Biomechanics (CHABA), Air Force Regulation (AFR 160-3), American Academy of Ophthalmology & Otolaryngology (AAOO), ASA-Z 24.5, Damage risk contours, Walsh – Healey Act, Occupational Safety & Health Act (OSHA), Environmental Protection Agency (EPA), Indian noise standards. Correction for aging in NIHL.
- Claims for hearing loss: Fletcher point eight formula, AMA method, AAOO formula, California variation in laws, factors in claim evaluation, variations in laws and regulations, date of injury, evaluation of hearing loss, number of tests.
- Indian studies/acts/regulations, American acts.

LIST OF BOOKS
7. BIS Specifications - List attached
   -IS Specifications - Noise Measurements.
   -IS:9876-1981 Guide to the measurement of airborne acoustical noise and evaluation of
its effects on man.
B3.6 Community Oriented Professional Practices in Speech Language Pathology and Audiology

(80+20 marks)  
Total = 75 hrs)

Objectives:
After studying this paper at the end of the year, the student should be able to understand the following –

- Epidemiology of speech, language and hearing disorders
- Service delivery and CBR issues
- Legislative support for rehabilitation
- Documentation and ethical issues

Unit 1  
(15 hrs)
- Epidemiology of speech, language and hearing disorders
- Environmental, Social, Economic implications and preventive education
- Levels of prevention: Primary, Secondary, Tertiary
- Survey, prevalence, Incidence and its implication in planning
- Health promotion, specific protection, early diagnosis and treatment of a high risk infant, Disability limitation, Educational and Vocational rehabilitation

Unit 2  
(15 hrs)
- Approaches to service delivery: Institution based, Camp based, Community based
- and Role of NGOs
- Review of services in India
- Integration of Disabled into the community and ICF 2001

Unit 3  
(15 hrs)
- Duties and responsibilities of SLP in various settings
- Professional ethics for SLPs, Code of Ethics, Right to Education Act, Industrial
- Employment Act
- Interacting with allied professional and community health workers

Unit 4  
(15 hrs)
- Planning services for the communication disordered population: Philosophy, planning, establishment of services for communication disorders- infrastructure, budget, staffing, equipment, furniture, policy making, record keeping, proposal writing.
- Strategies for awareness, public education and information (Camps, Print and audiovisual media, Surveys. Radio broadcasts, street plays).
- Empowering parents, persons with disabilities and the community; Skill transfer to DHLS, parents; grass-root level workers, teachers and health workers
Unit 5 (15 hrs)


- The professional as a witness; documentation; handling legal issues

LIST OF BOOKS

Compulsory Reading:

Additional/Optional Reading:
B 3.7 CLINICAL PRACTICUM IN SPEECH LANGUAGE PATHOLOGY

(50+50 marks)

1. Understand aspects of informal and formal assessment for
   i) Fluency disorders
   ii) Neurogenic language disorders
   iii) Motor speech disorders

2. Identify the Differential Diagnostic categories of these disorders

3. Familiarization on the use of various tests and materials available for assessment
   i) Western Aphasia Battery
   ii) Illinois Test of Psycholinguistic abilities
   iii) Boston Diagnostic Aphasia Examination
   iv) Revised Token Test
   v) Right Hemispheres Language Battery
   vi) Apraxia Battery for Adults
   vii) Frenchay Dysarthria Assessment
   viii) Stuttering Severity Instrument
   ix) Stuttering Prediction Instrument
   x) Indian tests and material available

4. Carry out assessment on at least 1 case each from the above mentioned disorders with an assessment report and appropriate referral letters.

5. Carry out therapeutic plan on a client with the above mentioned disorders and submit a report of the same.

6. • Conduct a fluency analysis in 4 normal samples (2 child sample and 2 adult sample) for the percentage of total disfluency and the individual disfluency on a conversation, narration and a reading task
   • Measurement of rate of speech (words per minute, syllables per second) in normals
   • Familiarization to different intonation, stress and rhythm patterns in speech samples (of different languages)
   • IPA transcription of dysfluent speech; calculating the severity using any of the formal tests
   • Comparing suprasegmental aspects of fluent and dysfluent speech samples
   • Comparing normal non-fluency speech sample and child stuttering sample along with SSI scores

7. Counselling parameters for the following groups of disorders:
   • Neurogenic language disorder (adult/geriatric; type)
   • Motor speech disorder (based on age and site of lesion)
   • Fluency disorders (age, motivation)
   • Being cognizant about the legislative support available and direct the same to the parents/caretakers

9. Preparing public education pamphlets, hand-outs on different disabilities
B 3.8 CLINICAL PRACTIUM AUDIOLOGY
(50+50 marks)

Section A: Hearing Aid Trial Postings
2. Observing Real Ear Insertion Gain measurement (10 cases)
3. Pre-selection based on audiological evaluations (10 cases)
4. Hearing Aid trials:
   - Functional gain, REIG, other methods with monoaural fitting, binaural fitting, Programmable hearing aid – Analog Digital
   - Explaining the benefits of hearing aid to the patient/caregiver
5. Counselling patients/caregivers regarding hearing aids – Care, maintenance, adjustments, tips to caregivers regarding acceptance of hearing aids (5 children & 5 adults), preparation of harness, cleaning of ear moulds. Binaural amplification and its uses.
7. Models and makes available in the market, their EAC, cost of hearing aids, its suitability to various audiogram configurations, age etc.
9. Administration of Self (Help) assessment scales.
10. Fitting of hearing aids for sloping hearing loss.

Section B: Noise & Rehabilitative Technology
1. Compile information on cochlear implants regarding candidacy, cost, places where it is done and rehabilitation of cases.
2. Calibration of pure tone audiometry (AC, BC, Speech)
3. Noise measurement and attenuation measurement of ear protection devices.
4. Holistic audiological assessment for differential diagnosis:
   a. Speech: PI/PB Function, Stenger, BC Speech
   b. Noise: SAL, SPIN, (10 cases)
   c. Immittance audiometry: Basic tests, Acoustic Reflex Decay, Eustachia Tube function, SPAR
Compiling reports for the above.
Section C: Rehabilitation Audiology

1. Role-playing activities for speech reading, communication strategies and auditory learning.
2. Compile activities on management of deaf-blind children.
3. Compile activities on management of children with central auditory processing disorders.
4. Compile information on cochlear implants reg. candidacy, cost, places where it is done and rehabilitation of cases, in Indian contexts.

Section D: Diagnostic Audiology

Holistic Diagnostic Interpretation and Report writing for Adult and Paediatric Test battery.

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