सत्यमेव जयते

भारतीय पुनर्वास परिषद्

Master of Science
(Speech-Language Pathology)

M.Sc. (SLP)

Rules, Regulations and Curriculum Framework

Effective from Academic Session 2024-25

Two Years Duration

REHABILITATION COUNCIL OF INDIA

(Statutory Body of the Ministry of Social Justice & Empowerment)

Department of Empowerment of Persons with Disabilities (Divyangjan)

Government of India

B-22, Qutab Institutional Area New Delhi – 110 016

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Preamble

The rehabilitation Council of India, the apex body entrusted with the responsibility of maintenance of standards in the training of rehabilitation personnel and professionals in India, periodically undertakes revision of curriculum of its training programs. There was a sense of urgency in this year's proposal for revision because the components of the New Education Policy 2020 – the flagship program of the Government of India – had to be incorporated. The present revision has included many salient features of the NEP 2020, namely, major – minor subjects dimension, choice of subjects across multidisciplinary fields of study, ratio of theory to clinical/practical subjects and the credits system, to name a few. The present revision has also considered and included aspects of National Credit Framework, 2023 of UGC. The prospective students have to log in 80 credits, spread over major, minor, and clinical subjects, for a Master's degree in Speech-language Pathology.

In addition, the guidelines recommended by the National Medical Commission under Graduate Medical Education Regulations 2023 to define the profile of the trained graduates in the field have been adopted. The program objectives have been tuned to reflect this.

Rules, Regulations, and Curriculum 2024-25 (Semester Scheme)

1.0 Name of the course offered

The nomenclature of the program shall be Master of Science (Speech-language Pathology). M.Sc (SLP) shall be the short form.

2.0 Objectives of the M.Sc (SLP) program

The objectives of the M.Sc (SLP) program are to equip the students with knowledge and skills to

- function as teachers and researchers in institutions of higher learning,
- diagnose and manage disorders of speech, language, and swallowing across lifespan,
- counsel and guide persons with disorders of speech, language and swallowing as well as their family members,
- implement rehabilitation programs for persons with speech, language and swallowing disorders,
- to function as the disability certification authority in the field,
- liaise with professionals in allied fields and other stake holders,
- implement prevention and public education programs,
- undertake advocacy measures on behalf of and for persons with speech, language and swallowing disorders,
- advise government and other institutions on legal and policy issues related to persons with communication disorders, and
- to establish and administer institutions of higher learning.

3.0 Duration of the program

a) The program shall be of 4 semesters (2 academic years).

b) Students have to successfully complete the program within 4 years from the date of admission.

c) An academic year consists of two semesters, and each semester shall extend over a minimum period of eighteen weeks excluding examination days. The semester spread shall be as follows:

Odd semesters – 1, 3	July - November
Even semesters – 2, 4,	January - May
Examinations and vacation	December and June

d) There shall be examination at the end of each semester.

4.0 Medium of instruction

Medium of instruction shall be English.

5.0 Eligibility for admission

5.1 Candidates with BASLP/B.Sc (Speech & Hearing) degree of any recognized university by the Rehabilitation Council of India with a minimum of 55% aggregate marks.

5.2 Admission to Master's program shall preferably be on the basis of an entrance examination conducted by the respective university.

6.0 Time Structure of the Program

Time structure of the program shall be as follows:

Months / Semester	6
Weeks / Semester	26 weeks
Examination + Vacation	8 weeks in each semester
Study duration in each semester	18 weeks
Days per week / Semester	5 days / 90 days
Hours / day / Semester	7 hours / 630 hours per semester

7.0 Attendance

7.0 Attendance shall not be less than 80% in theory and 90% in clinicals in each semester for students to be eligible to appear for examination at the end of each semester.

7.1 Students not meeting the attendance requirements shall not be allowed to take examination in the particular paper with shortage of attendance and will be marked 'failed.' Such students can take the exam in that particular paper in the next odd or even semester as the case may be.

8.0 Examination Pattern

8.1 The examination pattern and papers shall be as shown in the table below:

Code	Subject	Marks			Credits
		Exam	IA	Total	
SLP101 M	Language Disorders in Children - Advanced	80	20	100	4
SLP102 M	Speech Sound Production and Disorders	80	20	100	4
SLP103 MC	Research Methods, Epidemiology & Statistics	80	20	100	3
SLP104 MC	Clinical Linguistics	80	20	100	3
SLP105 MO	Minor (Optional)	40	10	50	1
SLP106 M	Clinicals in Speech-language Pathology	80	20	100	6
		440	**110**	**550**	**21**
SLP201 M	Voice Science and Disorders	80	20	100	4
SLP202 M	Aphasia and Cognitive Communication Disorders	80	20	100	4
SLP203 M	Dysphagia	80	20	100	4
SLP204 MC	Neurobiology of Speech-language & Cognition	40	10	50	2
SLP205 MC	Language and Literacy Disorders	40	10	50	2
SLP206 MO	Minor (Optional)	40	10	50	1
SLP207 M	Clinicals in Speech-language Pathology	80	20	100	6
		440	**110**	**550**	**23**
SLP301 M	Disorders of Fluency and Prosody	80	20	100	4
SLP302 M	Neurogenic Speech Disorders	80	20	100	4
SLP303 MC	Genetics of Speech-language Pathologies	40	10	50	2
SLP304 M	Clinicals in Speech-language Pathology	80	20	100	6
		280	**70**	**350**	**16**
SLP401 M	Augmentative & Alternative Communication	80	20	100	4
SLP402 M	Dissertation	100	--	100	10
SLP403 M	Clinicals in Speech-language Pathology	80	20	100	6
		260	**40**	**300**	**20**
		1420	**330**	**1750**	**80**

8.2 Course content shall be as in **Annexure 1**

8.3 The students shall successfully complete 80 credits, as shown below, to be eligible for the award of the degree of Master of Science (SLP).

Major (M)	Speech-language Pathology	Theory	32 credits
Major (M)	Speech-language Pathology	Clinicals	24 credits
Minor Compulsory (MC)	Related Areas		12 credits
Minor Optional (MO)	Related Areas		2 Credits
Dissertation			10 Credits
Total			80 Credits

8.4 Performance in at least one written test and one assignment shall be the basis for awarding 50% internal assessment marks in each semester. The remaining 50% of IA shall be awarded on the basis of continuous assessment by the faculty teaching a given subject. Each institute can develop its own criteria for continuous assessment.

8.5 Award of IA marks for Clinical (Internals) – SLP 106 and SLP 304 as well as Clinical (External) – SLP 206 and SLP 403 – shall be on the same basis as described under 8.4 above. However, all the faculty members in charge of clinicals for the given semester shall award marks, respectively.

8.6 Examinations for Minor Optional (SLP 105 and SLP 206) as well as Clinical Internals (SLP 106 and SLP 304) shall be conducted by the institution, but the marks awarded shall be included in the university marks card.

8.7 Two internal examiners (nominated by the head of the department / institution from among the faculty of the department) shall conduct the clinical examinations (for SLP 106 and SLP 304) at the end of 1st and 3rd semester.

8.8 An external examiner shall conduct the clinical examinations for SLP 206 and SLP 403 at the end of the 2nd and 4th semester, respectively. All the faculty of the department shall award IA marks on the basis of the assessment of the candidates' work throughout the particular semester. Clinical examination shall be with clinical population like in medical profession. The examiners shall also evaluate records of clinical and practical work of the students. An internal faculty member can assist the external examiner(s) in Clinicals (External) (SLP 206 and SLP 403), but shall not award marks.

8.9 The institutions offering M.Sc (SLP) program are free to design the curriculum of the minor (optional) courses. The minor (optional) can be one or more of the following:

Event Related Potential
Auditory Processing Disorders
Speech Science
Oncology & Speech Swallow Disorders
Speech Perception
Entrepreneurship
Genetics of Hearing
Bioethics
Pharmacology
Learning Disability

9.0 Dissertation

9.0 Students shall complete a dissertation in the 3rd and 4th semester of the course and shall submit the same at the end of 4th semester before final examination. The dissertation shall be the result of experimental research. One or more external examiners shall assess the dissertation for 100 marks as decided by the respective university.

9.1 Candidates who fail to submit their dissertation on or before the stipulated date shall not be permitted to appear for the final semester examination.

10.0 Criteria for passing

10.1 The student is required to obtain a minimum of 50% in each of the theory papers, internal assessment, clinicals, and dissertation for a pass

10.2 Students will have to pass the clinical examination of the given semester to proceed to the next semester.

10.3 Carry-over of papers: Maximum number of attempts for any paper / clinical practicum / dissertation shall be three inclusive of first attempt. There shall be no supplementary examination.

11.0 Board of Examiners

11.1 There shall be a Board of Examiners for scrutinizing and approving the question papers as well as scheme of valuation

11.2 Fifty percent of the members in the Board of Examiners shall be from outside the institution.

12.0 Award of Degree

The University shall award the degree and issue certificate only after the candidates successfully complete all the examinations stipulated.

13.0 Infrastructure for starting the course

Institutions who have the infrastructure as given in Annexure 2 shall be permitted to offer Masters' program in Speech-Language Pathology, after due formalities.

14.0 Others

14.1 **Registration at Rehabilitation Council of India:** Successful postgraduates will be registered as Speech-language Pathologists in the Central Rehabilitation Register of the Rehabilitation Council of India with additional qualification.

14.2 On all other issues not mentioned in these rules and regulations like the pattern of question paper, grading, award of grace marks, and declaration of rank, among others, the rules and regulations of the respective University shall prevail.

14.3 These revised rules and regulations, guidelines and curriculum shall override all other rules and regulations in force. These rules and regulations shall come into force from the academic year 2024-25.

Annexure 1

Course Content : 2-year M.Sc (SLP) Program

Semester 1

SLP 101 M : Language Disorders in Children - Advanced

Hours 60 **Marks 100 : Credits 4**

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

a) explain theories and models of language acquisition in monolingual/ bi/ multilingual children.
b) understand the application of theories and models of language acquisition to assessment and management of language deficits and disorders in children,
c) describe the basis of developmental and acquired language disorders in children
d) conduct language assessment and contribute to diagnosis of children with disorders influencing/affecting language
e) plan and implement management strategies for development of communication of children with disorders influencing/affecting
f) apply principles of evidence based-practice in both assessment and management of language deficits or disorders in children.
g) understand the role of other team members in assessment and management of language deficits/ disorders in children.
h) liaise with other members of team for assessment and management of children with language deficits/ disorders.
i) advocate for children with disorders influencing/ affecting language.

Unit 1: Theories and Models of Language Acquisition

a) Critically evaluate theories of language acquisition- Biological maturation, linguistic, cognitive, information processing and social theory.
b) Describe the models in child language disorders - Dual-Route Cascaded Models, Connectionist Models, Hierarchical Models.
c) Understand the Application of theories of language acquisition and models to assessment and management of children with disorders influencing/affecting language.
d) Psycholinguistic and neurolinguistic processesing of language in children.
e) Concept of neurodiversity and neurodiversity affirming practices in assessment and management of children with language deficits/ disorders.

Unit 2: Assessment and Management of Language Disorders in Children

a) DSM 5 and ICD 10: classification, nomenclature, and characteristics of disorders influencing/ affecting language in children.
b) Controversies and challenges in implementation of DSM 5 and ICD 10 for diagnosis of children with deficits/ disorders of language.
c) Critical appraisal of tests and tools for assessment of language and communication in children and adolescents- Western & Indian:
d) Relevance of neuroimaging methods and cortical potentials in the assessment of language disorders in children
e) General principles, approaches and techniques to management of language deficits and

disorders.

f) Evidence-based practice and response-to-intervention in child language disorders
g) Team approach to assessment and management of children with language deficits/ disorders with special emphasis on diagnostic considerations by developmental & behavioral pediatricians and psychologists for disorders influencing/ affecting language, and management considerations for sensory processing and motor deficits by occupational therapists/ physiotherapists.
h) Parents as equal partners in management of children with language deficits/ disorders: guidance and counseling by SLP, Parent empowerment/ Parent implemented intervention for language delay/disorders.
i) Use of AAC for communication in children with language deficits and disorders
j) Advocacy for children with deficits/ disorders of language: awareness, concessions, facilities and rights of children with disorders affecting language with emphasis on social aspects and education.

Unit 3: Conditions Influencing Language in Children - I

a) Causes, features, characteristics (speech, language, communication, cognitive behavioral, and literacy), specific assessments and management of
   - congenital conditions like genetic and chromosomal abnormalities,
   - prenatal issues like malnourishment, trauma, severe anxiety, exposure to alcohol and other drugs among others
   - natal issues like pre-maturity, low birth weight, delayed birth cry and others
   - twins/ multiple birth,
   - Intellectual disabilities,
   - sensory impairments across degrees and types of vision and hearing
   - specific language impairment/ developmental language disorder,
   - emotional disturbances in children including severe anxiety disorder
   - family deprivation- children in orphanages, early vs. late adopted children
   - special populations like children from very low income families, nomadic tribes, war zones etc.

Unit 4: Disorders Affecting Language in Children - II

a) Autism Spectrum Disorders: Etiology, defining characteristics, symbolic abilities and social aspects of communication, application of theory of mind to understanding the characteristics of ASD, Diagnosis of autism spectrum disorders – tools; Team approach to diagnosis and management of ASD. Applied behavioral analysis, Hanen approach, Factors to be considered for management decision and its implementation- Analytical Vs Global language processing, sensory processing, presence of comorbidities like verbal apraxia etc.
b) Attention Deficit Hyperactivity Disorders - Causes, development of language and literacy in children with ADHD, characteristics and issues of adolescents with ADHD, tools / tests used for assessment and diagnosis of ADHD in India and globally. Importance of multidisciplinary team in the diagnosis and management of ADHD, and its members..
c) Acquired language disorders: causes (stroke, trauma, epilepsy etc.), incidence and prevalence of acquired language disorders across different etiologies globally and in India; immediate and long term effects on speech, language, cognition, behavior, emotions, and literacy: Test/ Tools for assessment, management approaches and techniques, factors affecting prognosis.

Unit 5: Bilingualism in Children

a) Types of Bi/multilingualism
b) Processing of language in bilingual children
c) Factors influencing second language acquisition
d) Variables in second language acquisition: cognitive-linguistic and affective
e) Assessment and diagnostic considerations in bilingual children with deficits/ disorders of language.
f) Management considerations in bilingual children with deficits/ disorders of language.
g) Challenges in India- development of equivalent tests/ tools for assessment of language across language, diagnosis in bilingual children, management decisions for bilingual children including language for therapy and education of bilingual children with deficits/ disorders of language and others.

Recommended Reading

a) American Psychiatric Association. (2015). Neurodevelopmental disorders: DSM-5® selections. American Psychiatric Pub.
b) Berk, L. (2015). Child development. Pearson Higher Education AU.
c) Bhatia, T. K. & Ritchie, W. C. (2014). Handbook of Bilingualism and Multilingualism. 2nd Ed. East Sussex, Wiley Blackwell.
d) Goldstein, S., & Ozonoff, S. (Eds.). (2018). Assessment of autism spectrum disorder. Guilford Publications.
e) Hegde, M. N., & Christine, M. A. (2006). Language Disorders in Children: An Evidence Based Approach to Assessment and Treatment. Boston, Pearson Education Inc.
f) Kaderavek, J. N. (2015). Language Disorders in Children: Fundamental Concepts of Assessment and Intervention. 2nd Ed. USA, Pearson Education IncLees, J. A. (2005). Children with Acquired Aphasias. London, Whurr Publishers Ltd.
g) Levey, S. (2014). Introduction to Language Development. San Diego: Plural Publishing Inc.
h) McCauley, R. J. (2013). Assessment of language disorders in children. Psychology
i) Murdoch, B. E. (2017). Acquired neurological speech/language disorders in childhood. CRC Press.
j) Norbury, P. R. & Courtenay F. (2012). Language Disorders from Infancy through Adolescence: Listening, Speaking, Reading, Writing, and Communicating. Missouri, Elsevier Mosby.

SLP102 M : Speech Sound Production and Disorders

Hours 60 **Marks 100 : Credits 4**

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

a) explain the theoretical constructs of speech production, speech sound development and analysis of speech,
b) choose instrumentation to measure acoustic, aerodynamic and other aspects of speech production,
c) assess and intervene to address phonological and speech sound errors,
d) assess and intervene to address speech sound disorders in individuals with congenital orofacial anomalies, sensory and cognitive deficits, and
e) apply concepts of speech production analysis in the management.

Unit 1: Components and Physiology of Speech Production

a) Components of speech and its production dynamics - Critical evaluation of acoustic theory of speech production: source and filter characteristics; output speech and its characteristics – integration of systems, development of speech and speech motor control
b) Physiological aspects of respiratory system - speech breathing and aerodynamics of speech: mechanics of airflow – laminar, orifice and turbulent flow: maintenance of airway pressure for speech – neural control
c) Physiological aspects of laryngeal system - Voiced & Voiceless speech sounds, upper - constrictors in upper airway; aerodynamics of speech sounds
d) Physiological aspects of articulatory and resonatory system – velopharyngeal – nasal - oral function in speech production, normal aspects of articulation & coarticulation, Effects of contextual, and speaker related factors – sensory information and control variables

Unit 2: Techniques to Measure Speech Physiology

a) Instrumentation and metrics in respiratory and laryngeal systems
b) Speech acoustic analysis – applications in acoustic phonetics – spectral analysis and speech spectrography and spectrograms
c) Instrumentation and metrics in articulatory and resonatory system (Instrumentation and working principles of electromagnetic articulography, ultrasound, digital signal processing)
d) X-rays, ultrasound and Neuroimaging - MRI, fMRI, CT, PET, SPECT, and other advanced techniques – its applications to understand speech physiology

Unit 3: Speech Sound Acquisition and Disorders

a) Models of speech acquisition and factors influencing acquisition of speech – linking perception and production, Phonological development and related factors
b) Classification and diagnosis of speech sound disorders – comorbidity in speech sound disorders
c) Speech sound assessment approaches and procedures: phonological assessment (formal and informal), Assessment of phonological awareness and processing, Critical appraisal of test material in multilingual environments, sampling, transcription
d) Intervention: evidence based approaches, motor learning principles & approaches, linguistic approaches, consideration in intervention (target selection, progress measurement & generalization), software applications and telehealth-intervention

Unit 4: Cleft Lip and Palate and Other Craniofacial Anomalies: Assessment and Management

a) Cleft Lip and palate, and other craniofacial anomalies - causes, characteristics, Problems associated with clefts and craniofacial anomalies – feeding, developmental aspects, resonance, velopharyngeal dysfunction, ENT anomalies, dental anomalies and psychosocial aspects
b) Interdisciplinary and team care - assessment procedures (Imaging techniques, acoustic measurements, aerodynamic measurements)
c) Surgical, orthognathic and prosthetic management in CLP and other craniofacial anomalies
d) Speech therapy and early intervention methods for speech and language in children with CLP, evidence based approaches for articulation correction and resonance management in velopharyngeal dysfunction.

Unit 5: Other Aspects of Study of Speech Production and Analysis

a) Speech perception – theory and its application to understand speech production
b) Speech synthesis, Speech recognition and Speaker recognition
c) Forensic speech analysis
d) Infant cry analysis, Speech data analytics and its applications

Recommended Reading

a) Bauman-Wängler, J. A., Garcia, D. (2020). Phonological Treatment of Speech Sound Disorders in Children: A Practical Guide. United States: Plural Publishing, Incorporated.
b) Behrman, A., Finan, D. (2021). Speech and Voice Science. United States: Plural Publishing, Incorporated.
c) Bernthal, J. E., Bankson, N. W., Flipsen, P. (2017). Articulation and Phonological Disorders: Speech Sound Disorders in Children. United Kingdom: Pearson.
d) Ferrand, C. T. (2018). Speech Science: An Integrated Approach to Theory and Clinical Practice. United Kingdom: Pearson.
e) Hixon, T. J., Weismer, G., Hoit, J. D. (2020). Preclinical Speech Science: Anatomy, Physiology, Acoustics, and Perception. United States: Plural Publishing Incorporated.
f) Kummer, A. W. (2013). Cleft Palate & Craniofacial Anomalies: Effects on Speech and Resonance. United States: Cengage Learning.
g) MacKay, I. R. A. (2023). Phonetics and Speech Science. United Kingdom: Cambridge University Press.
h) Munro, M. J. (2020). Applying Phonetics: Speech Science in Everyday Life. United Kingdom: Wiley.
i) Raphael, L. J., Borden, G. J., Harris, K. S. (2011). Speech Science Primer: Physiology, Acoustics, and Perception of Speech. (6th Ed). Argentina: Lippincott Williams & Wilkins

SLP 103 MC : Research Methods, Epidemiology & Statistics

Hours 45 **Marks 100 : Credits: 3**

Objectives: After completing this course, the student will

a) have the skills to frame research questions and design experiments,
b) decide on the appropriate statistical methods to test hypotheses and interpret the results,
b) be aware of epidemiological issues and its relevance in speech-language research,
c) undertake evidence based practice in audiology, and
d) observe ethical practices in research

Unit 1: Experimental Designs and Their Applicability in Speech-language Research

a) Types of research- post facto research, normative research, standard group comparison, experimental research, clinical and applied research, sample surveys, evaluation research
b) Methods of observation and measurement, strategies and designs in research
c) Experimental designs, single subject designs and group designs
d) Critical analysis of the research methods employed in audiology.
e) Documentation and research writing
f) Ethical considerations in research – National and international guidelines

Unit 2: Epidemiology

a) Epidemiology: Definition, basic concepts – scope and function of epidemiology
b) Study designs in epidemiology: Cohort studies, case-control studies, cross-sectional studies, clinical trials
c) Measures in epidemiology – Ratios, proportions, rates, relative risk, odds ratio
c) Identify biases and their consequences in published literature.
d) Describe criteria for characterizing the causality of associations.
e) Application of epidemiological concepts in evaluation and screening procedures employed in audiology
f) Application and impact of epidemiology on national and local policy; influence of epidemiology on ethical and professional issues

Unit 3: Statistical Measures and Their Features

a) Review of data description and exploratory data analysis (Numerical and graphical summaries)
b) Probability concepts and models
c) Statistical Inference – Estimation Confidence Intervals
d) Statistical Inference – Basic concepts related to hypothesis testing – null hypothesis, alternative hypothesis, significance level, statistically significant, critical value, acceptance / rejection region, p-value, power, types of errors: Type I (□), Type II (□), one-sided (one-tailed) test, Two-sided (two-tailed) test
e) Parametric and non-parametric approaches to hypothesis testing
f) Categorical data analysis - contingency tables, Chi-square test for independence of attributes
g) Measures of association (Contingency coefficient, Cramer's V), Kappa coefficient

Unit 4: Regression, Univariate and Multivariate Analysis

a) Correlation, regression analysis and prediction including multiple regression; logistic regression; path analysis
b) Analysis of Variance (ANOVA)- Basic models, assumptions, one way and two way ANOVA; Consequence of failure of assumptions underlying ANOVA; Tests for additivity, homogeneity, transformation; Post – hoc tests; Analysis of Covariance (ANOCOVA); Repeated measure ANOVA
c) Multivariate analysis: Need for multivariate analysis, various methods including MANOVA, MANCOVA
d) Introduction to principal component analysis, factor analysis, discriminant function, multidimensional scaling
e) Evaluation of application of statistics to different research designs used in different publications
f) Critical analysis of research articles in the field: Analysis of research designs in different areas of Speech-language Pathology

Unit 5: Evidence Based Practice

a) Introduction to Evidence Based Practice (EBP) and Steps to EBP from formulating foreground question, finding best current evidence, critical appraisal of best current evidence, summarizing evidence, integrating evidence and tracking progress.
b) Concepts related to practical significance (effect size) vs. statistical significance, precision of measurement (confidence intervals)
c) Levels of evidence: For experimental and non-experimental designs; treatment efficacy-randomized control study, quasi experimental study, correlation and case study, single subject designs, expert committee report, consensus conference
d) Measures of diagnostic accuracy – positive and negative likelihood ratios; positive predictive value, negative predictive value, diagnostic odds ratio
e) Concepts related to randomized control trials: Comparative groups- allocation concealment / random allocation; importance of participation and follow up in understanding, evaluating and applying randomized controlled trial results
e) Methods of carrying out therapy trials; execution, indexing and reporting of therapy trials – efficacy studies; Conventions to study outcomes - i) Absolute risk reduction, ii) Absolute benefit increase, iii) Absolute risk increase, and iv) Absolute benefit reduction
f) Systematic review and meta-analysis; importance of research publications in terms of systematic review, meta-analysis, clinical practice guidelines, health technology assessments.
g) Challenges in implementation of EBP in Speech-language Pathology in India and future directions

Recommended Reading

a) Andy Field (2009). Discovering Statistics Using SPSS. (3rd Ed.). SAGE Publications
b) Bernard Rosner. (2011). Fundamentals of Biostatistics (7th Ed.). Cengage Learning,
c) David C. Howell. (2014). Fundamental Statistics for the Behavioral Sciences (8th Ed.). Jon-David Hague publishers.
d) David L. Irwin, Norman J. Lass, Mary Pannbacker, Mary Ellen Tekieli Koay, Jennifer S. Whited (2020). Clinical research methods in speech-language pathology and audiology (3rd Edition), San Diego, CA: Plural Publishing.
e) Hegde M. N. (2024). A course book on Scientific and professional writing for speech language pathology (6th Edition), San Diego, CA: Plural Publishing, Inc.

f) Hegde, M. N. (2021). Clinical research in communicative disorders: Principles and strategies. (4th Edition), San Diego, CA: Plural Publishing.
g) Kothari, CR (2004). Research Methodology- Methods &Techniques. (3rd Ed.). New Age International (P) Limited, Publishers.
h) Lauren K. Nelson, Jaimie L. Gilbert (2021). Research in Communication Sciences and Disorders: Methods for Systematic Inquiry. (4th Edition), San Diego, CA: Plural Publishing.
i) Sabine, Landau, Brian S. Everitt. (2004). A Handbook of Statistical Analyses using SPSS. Chapman & Hall/CRC Press LLC.
j) Vinaya Manchaiah, Eldré W. Beukes, Ross J. Roeser (2022). Evaluating and Conducting Research in Audiology. San Diego, CA: Plural Publishing.
k) Visweswara Rao, K (2010). Bio Statistics in Brief Made Easy. Jaypee Brothers Medical Publishers.
l) Wendy L. Martinez, & Angel R. Martinez. (2002). Computational Statistics Handbook with MATLAB. Chapman & Hall/CRC Press LLC.

SLP 104 MC : Clinical Linguistics

Hours 45 **Marks 100 : Credits 3**

Objectives: At the end of the course, the student will be able to

a) understand aspects of clinical linguistics relevant to speech-language pathology,
b) trace the acquisition process of different components of language and disorders affecting it,
c) discuss general concepts, theoretical background and issues related to psycholinguistics and neurolinguistics,
d) identify the importance of multilingual and multicultural issues in the management of clinical population.

Unit 1: Phonological, Semantic and Syntactic Acquisition and Related Disorders

a) Principles of clinical linguistics and their clinical relevance to speech language pathology.
b) Phonological acquisition and disorders
c) Semantic acquisition and disorders
d) Syntactic acquisition and disorders

Unit 2: Pragmatics and Sociolinguistic Concepts

a) Pragmatics – Theoretical background: Discourse, deixis, anaphora, maxims and truth Relations
b) Discourse comprehension and discourse analysis in neurotypical and persons with disorders
c) Development of pragmatics in children
d) Pragmatic disorders with respect to some clinical disorders
e) Sociolinguistic concepts relevant to speech-language pathologists (language and dialectal issues, various types and dialects, diglossia, stylistic variation of language-registers, language contact-Creoles, Pidgins, language maintenance, language shift and language death, language deficiency)

Unit 3: Psycholinguistics and Language Acquisition

a) Issues involved in language acquisition – Motherese /child directed speech
b) Models of second language acquisition
c) Language acquisition in bi- and multi-lingual environments – concepts related to proficiency, dominance etc,; issues and implications for assessment and intervention
d) Psycho-linguistic models

Unit 4: Introduction to Neurolinguistics

a) Language and lateralization – left brain and right brain differences
b) Brief on neuroanatomical and neurophysiological bases of language learning and dysfunction
c) Mechanism and bases of recognition of spoken and visual word, sentence processing and discourse comprehension.

Unit 5: Multilingual and Multicultural Issues in Communication

a) India as a multilingual nation– A brief introduction to the major language families of India
b) Relation between language and culture, language and thought relationship in view of Sapir-Whorf hypothesis: linguistic determinism and linguistic relativity
c) Cultural issues in verbal and non-verbal communication
d) Multicultural and multilingual issues in rehabilitation with special reference to India

Recommended Reading

a) Allan, B. (2014). The guidebook to sociolinguistics.UK: Wiley Blackwell.
b) Ball, M., J., Perkins, M., R., Müller, N. & Howard, S. (2008). The handbook of clinical linguistics. (Eds). Oxford: Blackwell Publishing.
c) Bishop, D. V. M., & Leonard, L. B. (2007).Speech and language impairments in children. USA: Psychology
d) Bonvillian, N. (2011). Language, culture and communication. New Jersey: Pearson Education.
e) Pressacy, D. P. (2007).The Cambridge handbook of phonology. Cambridge: Cambridge University Press..
f) Wei, L. (2014). Applied linguistics.UK: Wiley Blackwell.

SLP 105 MO : Minor Optional - 1

Hours 15 **Marks 50 : Credits 1**

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

b) The institution itself can draw the syllabus for the course.

Event Related Potential
Speech Science
Perception
Genetics of Hearing
Pharmacology
Teaching, Learning in Speech-language Pathology
Auditory Processing Disorders
Oncology & Swallow Disorders Speech
Entrepreneurship
Bioethics
Learning Disability

SLP 106 M: Clinicals in Speech-language Pathology

Hours 180+ **Marks 100: Credits 6**

General

a) 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.

b) Decisions in clinical work with the speech-language disordered – assessment, therapy and counseling - shall be guided by research evidence (evidence-based practice).

c) Student-clinicians shall periodically communicate with their clinical population on the progress the latter is making with evidence.

d) PGs must be exposed to advanced methodologies (use of gadgets and tools), varied service delivery systems (individual, group, camp based, and tele/mobile based), and evidence-based practices in assessment and management of communication and swallowing disorders. Care must be taken to facilitate clinical exposure and training in addition to those focused in the undergraduate program.

e) Additional emphasis should be on facilitating interaction with professionals in transdisciplinary management team (medical and non-medical).

Knowhow

a) Observation of endoscopic examination of persons with cleft lip and palate as part of team assessment.
b) Observe and identify reports of children with neurodevelopmental language disorders in tests such as EEG, CT Scan, MRI etc.
c) Certification procedures, Rights and privileges of persons with communication disorder, Ethics in clinical practices
d) Differential diagnosis of conditions relevant to speech - language as per DSM-V and
e) ICD 10 classifications

Demonstrate

a) Record language samples of 5 typically developing children and 5 children with language disorders, transcribe the samples using International Phonetic Alphabet (IPA) and perform analysis of language in terms of different components of language
b) Complete perceptual analysis of speech samples of persons with speech sound disorders and Cleft-lip palate.
c) Demonstration of therapy techniques for disorders of speech sound, and neurodevelopmental language disorders.

Do

a) Carry out complete evaluation, write detailed evaluation report, counsel persons with communication disorders and their families with reference to the following:

- Five children with language disorders using appropriate tests/protocols: Autism

Spectrum Disorders, Attention Deficit Hyperactivity Disorder (ADHD), cognitive impairment and global developmental delay.

- Five children with speech sound disorders – record and transcribe speech samples (word and connected speech), carry out error analysis – pattern analysis, calculate percentage consonant correct, mean length of utterance.
- Plan and carry out appropriate intervention program for children with neurodevelopmental language disorders and children with speech sound disorders.
- Plan and carry out intervention program for a child with language disorder using AAC

Evaluation

a) Internal Assessment: A continuous formative assessment will be done by the faculty/clinical staff based on clinical activities of the student throughout the semester..

b) Examination at the end of the semester will include work with the clinical population, spot test, OSCE, records, viva-voce

Semester 2

SLP 201 M : Voice Science and Disorders

Hours 60 **Marks 100 : Credits 4**

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

a) understand the biomechanics of voice production and role of systems involved in voice production,
b) explain the principles and methods in the assessment and management of voice disorders,
c) explain the causes of voice problems of professional voice users,
d) address the issues that professional voice users are concerned about their voice and maintenance of vocal hygiene,
e) plan different service delivery models and procedures in a voice clinic
f) carry out vocal rehabilitation for individuals pre- & post- laryngectomy

Unit 1: Voice Science

a) Vocology – scope and objectives
b) Breathing and voicing: lungs and airways, breathing mechanism as an interactive sound generating system
c) Vocal folds and voice: muscular properties and vocal behaviours, biomechanics and voice control/modulation, voice fatigue, vocal injury and recovery
d) Resonance and voice: concepts of acoustic impedance, reactance, inertance, and compliance, acoustic impedance of the vocal tract, the effect of vocal tract reactance on self-sustained vocal fold oscillation, idealized vocal tract shapes and voice quality

Unit 2: Voice Assessment and Voice Disorders

a) Voice clinics: SLP led clinics vs. SLP in a medical team, space and other infrastructural requirements, specialty clinics considering needs of specific population
b) Vocometry: assessing vocal ability: principles, methods and procedures: measurement scales, auditory perceptual evaluation and instrumentation for voice assessment: visualization techniques, acoustic analysis, aerodynamic analysis, glottography, and electromyography
c) Voice disorders: issues in definition, incidence and prevalence, classification of voice pathologies, characteristics and pathophysiology: Structural, neuropathological, idiopathic, functional/behavioral - pathologies related to mechanical stress, tissue elasticity, fluid transport, airway environment and abnormal muscle activation
d) Voice disorders in specific populations: paediatric voice disorders, aging voice, vocal cord dysfunction/paradoxical vocal fold motion, transgender and trans-sexual voice

Unit 3: Voice Habilitation

a) Pharmacological and surgical effects on voice: Current trend in medical and surgical management– pre-operative and post-operative care and precautions
b) Voice habilitation: Current views and approaches; EBP for voice and its disorders; Voice therapy methods for children and adults.
c) Voice exercise principles and procedures: Physiological voice therapy methods Vs. Behavioral voice therapy methods, role of vocal hygiene, basics of exercise physiology, general principles, types of exercises, exercise prescription and progress, vocal exercise

techniques – vocal function exercises, resonant voice exercise, confidential voice therapy, psychological approaches, eclectic approach

d) Laryngeal rest, modified voice rest/conservative voice use, vocal hygiene; laryngeal rest versus exercise: effects on wound healing, general wound healing processes

Unit 4: Professional Voice Users

a) Vocal professionals and voice disorders: classification, pathologies, impact and occupational hazards, repetitive strain injuries, acute injuries and chronic problems
b) Voice habilitation for singers and elite vocal users: Demands on voice, nature of vocal training, voice fatigue and assessment, basic principles of motor learning, awareness training, and vocal exercises, concept of professional voice care team
c) Voice habilitation for teachers: voice problems in teachers: nature and manifestation, use of voice in classroom and factors influencing, vocal loading and assessment, vocal fatigue, techniques to improve vocal endurance
d) Patient compliance and concordance to voice management: Relevance of voice problems/voice problems as a public health concern, measuring severity of voice condition, measurement of compliance to management options, treatment variables and effects, patient-clinician interactions, socio cultural and economic considerations

Unit 5: Laryngectomy and Advanced Voice Rehabilitation

a) Laryngeal cancer - Anatomy & pathophysiology– impact on respiratory an swallowing functions, treatment options, surgical procedures and post operative care
b) Voice prosthesis and communication strategies – types and use of voice prosthesis, advanced communication strategies
c) Psychosocial impact and quality of life – psychosocial consideration for patients and families, assessment and enhancement of overall quality of life
d) Multidisciplinary approach and technological advances – collaboration in multidisciplinary team, review of technology advancements for rehabilitation

Recommended Reading

a) Behrman, A., & Haskell, J. (2019). Exercises for voice therapy. Plural Publishing.
b) Ferrand, C. T. (2019). Voice disorders: Scope of theory and practice. Pearson Higher
c) Johnson, A. F., & Jacobson, B. H. (2017). Medical speech-language pathology: A practitioner's guide. (3rd Ed). Thieme.
d) Martin, S. (2020). Working with Voice Disorders: Theory and Practice. United Kingdom: Taylor & Francis.
e) Rantala, L., & Sala, E. (Eds.). (2019). Voice ergonomics: Occupational and professional voice care. Cambridge Scholars Publishing.
f) Ruddy, B. H., Ho, H., Sapienza, C., & Lehman, J. J. (Eds.). (2016). Cases in Head and Neck Cancer: A Multidisciplinary Approach. Plural Publishing.
g) Sapienza, C., Hoffman, B. (2022). Voice Disorders. United States: Plural Publishing, Incorporated.
h) Stewart, C. F., Kling, I. F., Allen, E. L. (2016). Voice Rehabilitation: Testing Hypotheses and Reframing Therapy. United States: Jones & Bartlett Learning.
i) Titze, I. R., & Verdolini A, K. (2012). Vocology: The science and practice of voice habilitation. Salt Lake City: National Center for Voice and Speech.

SLP 202 M : Aphasia and Cognitive Communication Disorders

Hours 60 **Marks 100 : Credits 4**

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

a) describe the resulting neuroanatomical substrates following aphasia and cognitive communication disorders,
b) identify and assess both linguistic and non-linguistic impairments in persons with aphasia and cognitive communication disorders
c) differentially diagnose between aphasias and cognitive communication disorders
d) manage linguistic as well as non-linguistic impairments in persons with aphasias and cognitive communication disorders, and
e) apply principles of evidence based practice in their clinical work with persons with aphasias and cognitive communication disorders

Unit 1: Neuroanatomical Basis and Impairments in Aphasia

a) Neuroanatomical Basis of Major Aphasia Types, Key Brain Regions, Aphasia Case Studies –Lesion-Deficit Relationships
b) Phonological Aspects of Aphasia
   - Sound Structure of Language: A Theoretical Framework
   - Speech Production
   - Speech Perception
c) Lexical Deficits In Aphasia
   - Functional Architecture of the Lexical System
   - Aspects of the Internal Structure of the Functional Components
d) Neural Basis of Semantic Processing:
   - Evidence from Patients- Organization of Semantic Memory, Category-Specific Semantic Disorders, Sensory-Functional Theory, Domain-Dependent Theory, Semantic Processing in Aphasia
   - Evidence from EEG- N400, Lexical Characteristics Affecting the N400, Lexicality, Vocabulary Class, Word Frequency, Concreteness, Neural Basis of the N 400
e) Syntactic Deficits in Aphasia
   - Sentence Production: Conceptions of Normal Production
   - Models to Understand Syntactic Deficits in Aphasia
   - Sentence Comprehension: A Framework for Normal Comprehension, Sentence Comprehension Impairment in Aphasia
   - Neural Basis of Sentence Comprehension: Evidence from Patients, Neuroimaging
a) Neural Basis of Reading & Writing
b) Neural Basis of Bilingualism and L2 Acquisition- Bilingualism, L2 Acquisition Theories, Neural Representation of L2 –Syntactic Processing –Phonological Processing –Lexical-Semantic Processing, Neural Control of Two Languages

Unit 2: Overview of Cognitive Communication Disorders

a) Traumatic Brain Injury (TBI), Right Hemisphere Damage (RHD), Dementia, PPA, Alcohol Induced Language Disorders and Metabolic Disorders of Language
b) Neuropathology of Cognitive Communication Disorders in Traumatic Brain Injury (TBI), Right Hemisphere Damage (RHD), , Alcohol Induced Language Disorders and Metabolic Disorders of Language
c) Cognitive communication deficits, classification and characteristics

d) Linguistic and Non-Linguistic Impairments in cognitive communication disorders
e) Phenomenon of normal and pathological ageing: Age associate improvement, MCI, and other variants of Dementia.
f) Theories ageing, and age related changes of the organ system, and cognition
g) Aging language, cognition and speech- primary, secondary and tertiary aging factors in cognition, language, voice, resonance and articulation and swallowing

Unit 3: Assessment in Aphasia and Cognitive Communication Disorders

a) Formal and informal assessment tools both Indian and western their logic, purpose, test constructs, rationale, scoring, procedures and interpretation.
b) Do's and don'ts in assessment procedures.
c) Formal Assessment Tools Indian and Western Versions - WAB, RTT, LPT, ABA, BDAE, PICA, Bedside Assessment, MOCA, RHLB, CLAP-Adult, MIRBI, – their Rationale, Scoring and Interpretation
d) Methods for studying language and the brain- neuroimaging and cortical potentials electroencephalography, magnetoencephalography, positron emission tomography, functional magnetic resonance imaging, N400 and T-complex
e) Differential diagnosis of different types of aphasia and Cognitive communication disorders

Unit 4: Recovery in Aphasia and Cognitive Communication Disorders

a) Plasticity and Recovery in Aphasia
b) Prognostic Factors of Recovery
c) Spontaneous recovery in Aphasia- Structural mechanisms; behavioral mechanisms and language recovery in brain
d) Recovery pattern in monolingual, bi/multilingual aphasia

Unit 5: Management of Persons with Aphasia and Cognitive Communication Disorders

a) Principles of Language Intervention- Research Principles for Clinicians, Delivering Language Intervention Services
b) Psychosocial/Functional Approaches to Intervention –Life Participation Approach to Aphasia, Social Approaches to Aphasia, traditional Approaches to Language Intervention – Schuell's Stimulation Approach, Thematic Language Simulation Approach, Context Based Approach, MIT, Language Oriented Treatment, PACE, VAT, HELPSS, VCIU, Manual for Adult Aphasia Therapy (MAAT) in Indian Context, Computer Applications in the Treatment of Aphasia
c) Cognitive communication approaches in rehabilitation
d) Role of supportive relationships in cognitive communication disorders
e) AAC in the intervention of aphasia and cognitive communication disorders
f) Tele-Rehabilitation in Persons with Aphasia.
g) Rights of Persons with Aphasia and Cognitive-communication disorders.
h) Medicolegal aspects in Aphasia and Cognitive-communication disorders.

Recommended Reading

a) Chapey, R. (2008).Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders. Philadelphia, Lippincott Williams & Wilkins.
b) Chop, C. W &Robnett, H. R (2015.). Gerontology for health care professional.MA: Jones and Bartlett Learning Burlington.
c) Gazzaniga, S., Ivry, M. S., Mangun, R. B., & George, R. (2014).Cognitive Neuroscience: The Biology of the Mind. New York, W. W. Norton & Company Inc.

d) Goswami, S. P., Shanbal, J. C., Samasthitha S., Navitha U., Chaitra S. &Ranjini M. (2011). Manual for Adult Aphasia Therapy in Kannada (MAAT-K).The publication of All India Institute of Speech and Hearing, Mysore. ISBN No. 978-93-81-854-17-0
e) Holmgren, E. & Rudkilde, E. S. (2013). Aphasia: classification, management practices, and Prognosis. New York: Nova Sciences Publishing.
f) Laura, L. M., & Heather, M. C. (2006).Neurogenic Disorders of Language: Theory Driven Clinical Practice. New York, Thomson Delmar Learning.
g) Papathanasiou, P. Coppens, & C. Potagas (2013), Aphasia and Related Neurogenic Communication Disorders.Burlington, Jones & Bartlett.
h) Morris, J. C. (1994). Handbook of Dementic Illnesses. NY, Marcel Dekker Inc.
i) Murray, L.L. & Clark, M.H (2015).Neuro-genic Disorders of Language and cognition. Austin, Texas, Pro-Ed Inc.
j) Petrides, M. (2014). Neuroanatomy of language regions of the human brain. UK: Elsevier.
k) Roth, F. P. &Worthington, C. K. (2016). Treatment resource manual for speech-language pathology. 5th Ed., Delmar, USA: Cenage Learning.

SLP 203 M : Dysphagia

Hours 60 **Marks: 100 - Credits: 4**

Objectives: At the end of the course, the students will

a) identify the neuroanatomical and neurophysiological bases of normal and abnormal swallowing in children and adults,
b) assess swallowing disorders across lifespan as a member of a trans-disciplinary team,
c) design intervention approaches, based in evidence based medicine, for feeding and swallowing disorders across the lifespan
d) assess and manage dysphagia based on evidence-based practices, and
e) strategize different service delivery models for intervention.

Unit 1: Neuroanatomical and Neurophysiological Bases of Swallowing

a) Structures involved in three phases of swallow, central and peripheral nervous system control of mastication and swallowing (anatomy & physiology of three phases & cranial nerve innervation)
b) Neuroanatomical Substrates of Swallowing Mechanism
c) Aetiologies for dysphagia in adults (structural anomalies, neurological conditions, mechanical & motility)
d) Age-related changes in eating & swallowing.
e) Role of cognition in swallowing disorders (post TBI and haemorrhagic stroke)

Unit 2: Assessment of Swallowing and its Disorders

a) Clinical Manifestation (Signs and Symptoms) of Dysphagia in Adults across the phases of Swallow
b) Clinical assessment of swallowing: Clinical bedside evaluation, various published protocols for clinical examination, cervical auscultation for clinical examination
c) Visual examination of swallowing and its disorders: modified barium swallow / videofluroscopic study of swallow, flexible endoscopic examination of swallowing – team for conducting assessment, procedure and interpretation , other instrumental evaluation (e.g., X Ray, Scintigraphy, Manometry, Transnasal esophagoscopy, acoustic analysis of swallowing)
d) Self-report questionnaires and quality of life assessment for dysphagia
e) Differential diagnosis - oral vs. pharyngeal dysphagia, prognostic variables and recommendations for oral/non-oral options for nutritional intake/ management.

Unit 3: Management of Dysphagia in Adults

a) Behavioral management - Compensatory and facilitatory strategies in detail, other behavioral management strategies (e.g., neuromuscular electrical stimulation)
b) Pharmacological and surgical management of dysphagia, Esophageal dysphagia – etiologies, symptoms, differential diagnosis and role of SLP in management.
c) Specific management strategies for mechanical causes of dysphagia (tracheostomy, glossectomy, mandibulectomy, oral/ pharyngeal cancer, trismus etc.)
d) Evidence Based Practice (EBP) - levels of evidence, strengths and weaknesses, evidence base for various management approaches, evaluation of patient progress and treatment efficacy - when to continue treatment, when to terminate and when referrals are appropriate)

Unit 4: Pediatric Dysphagia

a) Anatomical differences in neonatal and paediatric upper aero digestive tract with reference to adults, oral-motor and swallow development of infants and children,
b) Clinical manifestations of feeding and swallowing difficulties in children; motor and sensory issues in feeding/ swallowing among developmental conditions- Sensory based feeding disorders and special populations
c) Specific considerations for clinical and instrumental evaluation of swallowing in children
d) Direct and indirect strategies to facilitate safe swallow in children (including motor and sensory issues), SLP in Neonatal Intensive Care Unit: Etiology of feeding delay/disorders in neonates; assessment of primitive reflexes, suck-swallow coordination among neonates, management of feeding delay/disorders in neonates

Unit 5: Service Delivery and other Issues Related to Management

a) Scope of practice in the area of dysphagia: training in endoscopy, documentation, tele-practice
b) Trends across the world and in India: Review of practice guidelines, technical reports, position statements, knowledge & skills document relevant to dysphagia in India and other countries - issues in adopting and implementing the same in India.
c) Dysphagia clinics: SLP led clinics vs. SLP in a medical team, space and other infrastructural requirements within hospital setup, private clinics, schools and other centers.
d) Ethical and cultural considerations in dysphagia management

Recommended Reading

a) Barkmeier-Kraemer, J., Leonard, R. (2023). Dysphagia Assessment and Treatment Planning Workbook: A Team Approach, Fifth Edition. United States: Plural Publishing, Incorporated.
b) Chhetri, D., Dewan, K. (2018). Dysphagia. Netherlands: Elsevier Health Sciences.
c) Desuter, G. (Ed.). (2019). Oropharyngeal Dysphagia: Videoendoscopy-Guided Work-up and Management. Springer.
d) Ekberg, O. (Ed.). (2018). Dysphagia: diagnosis and treatment. Springer Science & Business Media.
e) Leonard, R. (2018). Dysphagia Assessment and Treatment Planning: A Team Approach, Fourth Edition. United States: Plural Publishing, Incorporated.
f) McCoy, Y., Wallace, T. (2018). The Adult Dysphagia Pocket Guide: Neuroanatomy to Clinical Practice. United States: Plural Publishing, Incorporated.
g) Murry, T., Chan, K., Carrau, R. L. (2020). Clinical Management of Swallowing Disorders. United States: Plural Publishing, Incorporated.
h) Patel, D. A., Kavitt, R. T., & Vaezi, M. F. (Eds.). (2019). Evaluation and management of dysphagia: an evidence-based approach. Springer Nature.
i) Warnecke, T., Dziewas, R., Langmore, S. (2021). Neurogenic Dysphagia. Germany: Springer International Publishing.
j) Willging, J. P., Miller, C. K., Cohen, A. P. (2019). Pediatric Dysphagia: Etiologies, Diagnosis, and Management. United States: Plural Publishing, Incorporated.

SLP 204 M : Neurobiology of Speech-language and Cognition

Hours 30 **Marks 50 : Credits 2**

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

a) identify and describe the elements of neuroscience pertaining to speech and language
b) discuss and interpret neuro-diagnostic findings
c) explain the role of neurotransmitters in speech, language and its disorders
d) know the effect of aging on CNS structures and assess the functions related to speech and language
e) advice and counsel clinical population on aging-related issues and communication

Unit 1: Neuro-diagnostic Procedures (clinical, radiological, physiological and behavioral) for Understanding Neurological and Biological Status of Speech-language Mechanisms

a) Review of anatomy and physiology of central nervous system and cranial nerves related to speech-language
b) Clinical examination of neurological status and neuro-diagnostic procedures for routine clinical examination - history, physical examination, reflexes, cranial nerve examination, sensory & motor examination, examination of mental functions
c) Neuro-imaging procedures: X-Ray, CT scan, MRI, fMRI, TMS, PET, SPECT and others - Advantages and disadvantages
d) Neuro-physiological procedures - evoked potentials (visual, auditory and somato-sensory), eye-tracking, eletromyography (EMG) - Advantages and disadvantages
e) Neuro-behavioral procedures - neurolinguistic investigation, priming and its types, reaction time measures and other related procedures

Unit 2: Role of Neurotransmitters in the Mediation of Speech-language

a) Neurotransmitters – Classification, major location, functions and synthesis / chemical composition
b) Signal propagation in the nervous system- ion channels, transport across cell membranes, resting potential and action potential
c) Organization and processing of information in brain, receptors, types of synapses, synaptic transmission- direct and indirect, exocytosis and endocytosis
d) Role of neurotransmitters in neuropathological conditions leading to speech and related disorders
e) Role of neurotransmitters in neuropathological conditions leading to language and related disorders

Unit 3: Neuroscience of Aging and its Effect on Speech and Language

a) Aging- definition, types - (senescence and senility, primary and secondary aging, biological and psychological aging), phenomenon of aging-(neurological, cognitive and behavioral correlates, structural changes with age, brain weight, ventricular size, microscopic changes and atrophy).
b) Theories of aging - biological, genetic and environmental, cellular, genetic, cumulative, random cell damage, programmed cell death, high level control of aging, cellular theories, geriatric theories and other theories,
c) Age related changes of the organ system- nervous system, special senses, respiratory.

d) Aging language, cognition and speech- primary, secondary and tertiary aging factors in cognition, language, voice, resonance and articulation and swallowing, cognitive aging
e) Neurophysiological /functional changes with age: accuracy, speed, range, endurance, coordination, stability and strength, neurobehavioral correlates of aging -lateralization of functions across life span, cerebral asymmetry, electrophysiological and behavioral evidences
f) Aging and its effect on speech and language: effects of aging on speech and language across life span: in typical and pathological conditions

Recommended Reading

a) Arslan, O. E. (2015). Neuroanatomical Basis of Clinical Neurology.2nd Edition, New York, CRC Press.
b) Benarroch, E. E., Daube, R. J., Flemming, D. K. & Westmoreland, F. B. (2008).Mayo Clinic Medical Neurosciences.5th Edition, USA, Mayo Clinic Scientific Press.
c) Bhatnagar, S. C. (2008). Neuroscience for the Study of Communicative Disorders.3rd Edition, New York, Wolters Kluwer Publisher.
d) Duffy, J. R. (2013). Neurological Bases of Motor Speech and its Pathologies, In Motor Speech Disorders: Substrates, Differential Diagnosis and Management. 3rd Edition, Missouri, Mosby Publisher.
e) Handy, T. C. (2005).Event-Related Potentials: A Methods Handbook. MIT press, London.
f) Kemmerer, D. (2015). Cognitive Neuroscience of Language. New York, Psychology Press.
g) Zigmond, M. J., Rowland, L. P. & Coyle J. T. (2015).Neurobiology of Brain Disorders: Biological Basis of Neurological and Psychiatric Disorders. Academic Press, New York.

SLP 205 MC : Language and Literacy Disorders

Hours 30 **Marks 50 : Credits 2**

Objectives: At the end of the course, the student will be able to

a) explain the relationships between language, literacy, and cognition and specifically the role of oral language in acquisition of literacy skills,
c) identify the developmental disorders influencing language and literacy in children,
d) assess language and literacy skills based on research evidence,
e) plan oral language based intervention strategies for children that are based on research evidence.

Unit 1: Reading: Development and Relationship with Language

a) Concepts related to reading and its acquisition – Decoding, reading accuracy, reading
b) fluency, reading comprehension;
c) Differences among writing systems for languages; Importance of phoneme-grapheme correspondence for reading
d) Foundations for development of reading in languages with different writing systems (Phonological processing, phonological awareness, orthographic skills, visual processing skills, oral language skills);
e) Role of oral language in the acquisition of literacy – Aspects of oral language contributing to decoding (e.g., vocabulary and morphosyntax) and reading comprehension (e.g., syntax, syntactic awareness etc.) and spelling (e.g., morphological awareness)
f) Stages of reading and writing development – emergent literacy to proficient reading comprehension; Models of reading development in English /alphabetic script and other writing systems.

Unit 2: Disorders Related Language and Literacy and its Assessment

a) Definition and differences among underachievement in school, learning disability, reading disability, dyslexia, dysgraphia, dyscalculia, language learning disability, language impairment/ specific language impairment; DSM V and ICD 10 classifications; challenges in use of classifications.
b) Linguistic characteristics of students with reading/language/learning disabilities and Issues related to co-morbidity and overlap among phonological disorders, specific language disorders, reading disability and auditory processing disorders with relation to development of reading
c) Screening of children for language disorders in schools; Standardized tests to assess language and (English and other languages) in children 5-18 years, other forms of assessments to identify children with language/learning disabilities
d) Informal assessment of different domains – Tasks and stimuli in specific languages for phonological awareness, orthographic skills, phonological processing, oral language skills etc, brief overview of assessment of associated areas (auditory processing, visual processing, memory etc.)
e) Criterion referenced assessments, language sampling, portfolio, dynamic assessment, curriculum-based assessment etc.,
f) Specific assessment tools for learning disability in India (e.g., NIMHANS battery, Dyslexia Assessment for Languages in India and other published tests)

Unit 3: Evidence Based Intervention for Language Based Literacy Skills and Issues related to

Service Delivery and Related Laws/Policies

a) Intervention approaches to promote emergent literacy, decoding and early reading skills, development of reading comprehension, remediate spelling and written language output
b) Research on cross-linguistics issues in intervention; intervention for children with bilingual / multilingual background and reading intervention
c) Modes of service delivery for school-aged children (clinical, consultative, collaborative, language-based classroom, peer-mediated)
d) Team members working children with literacy disorders; Response to Intervention– tiers and their role in instruction for poor readers; role of SLP in Response to Intervention
e) Acts, regulations and policies relevant to education and children with special needs in India (e.g., Right to Education Act, Sarva Siksha Abhiyan, regulations related to language exemption in examination, National Open School system).
f) Dyslexia associations/groups in India

Recommended Reading

a) Cabell, S. Q., Justice, L. M., Kaderavek, J., Pence, K. L., & Breit-Smith, A. (2008). Developmental disorders of language learning and cognition. John Wiley & Sons.
b) Clarke, P. J., Truelove, E., Hulme, C., &Snowling, M. J. (2013). Developing reading comprehension. John Wiley & Sons.
c) Hulme, C., & Snowling, M. J. (2009). Language development from theory to practice. Pearson Higher Ed.
d) Justice, L. M. (2006). Clinical approaches to emergent literacy intervention. Plural Publishing
e) Nag, S., & Snowling, M. J. (2012). School underachievement and specific learning difficulties. IACAPAP e-Textbook of Child and Adolescent Mental Health. Geneva: Intl. Association for Children and Adolescent Psychiatry and Allied Professions.
f) Paul, R. & Norbury, C. (2012).Language disorders from infancy through adolescence: Listening, speaking, reading, writing, and communicating (4th Ed.). St. Louis, MO: Elsevier.
g) Stone, C. A., Silliman, E. R., Ehren, B. J. & Wallach, G. P. (Eds.), (2016). Handbook of language and literacy: Development and disorders (2nd ed.), pp. 339-357. New York, NY: Guilford Press.
h) Turnbull, K. L. P., & Justice, L. M. (2011). Developing language and literacy: Effective intervention in the early years. John Wiley & Sons

SLP 206 MO : Minor Optional - 2

Hours 15 **Marks 50 : Credits 1**

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

b) The institution itself can draw the syllabus for the course.

Event Related Potential
Speech Science
Perception
Genetics of Hearing
Pharmacology
Teaching, Learning in Speech-language Pathology
Auditory Processing Disorders
Oncology & Swallow Disorders Speech
Entrepreneurship
Bioethics
Learning Disability

Semester 3

SLP 304 M: Clinicals in Speech-language Pathology

Hours 180+ **Marks 100: Credits 6**

General

a) 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.

b) Decisions in clinical work with the speech-language disordered – assessment, therapy and counseling - shall be guided by research evidence (evidence-based practice).

c) Student-clinicians shall periodically communicate with their clinical population on the progress the latter is making with evidence.

d) PGs must be exposed to advanced methodologies (use of gadgets and tools), varied service delivery systems (individual, group, camp based, and tele/mobile based), and evidence-based practices in assessment and management of communication and swallowing disorders. Care must be taken to facilitate clinical exposure and training in addition to those focused in the undergraduate program.

e) Additional emphasis should be on facilitating interaction with professionals in transdisciplinary management team (medical and non-medical).

Knowhow

a) Perform acoustic analysis of speech including FFT, LPC, cepstrum and inverse filtering; acoustic analysis of vowels, diphthongs, plosives, nasals, fricatives, Affricates and other speech sounds using spectrograms on PRAAT
b) Observation of stroboscopic evaluation of persons with voice disorders as part of team assessment
c) Observation of endoscopic examination of persons with cleft lip and palate as part of team assessment.
d) Observation of modified barium swallow and/or flexible endoscopic examination of swallowing as part of team assessment
e) Observe and identify reports of persons with neurogenic communication disorders in tests such as EEG, CT Scan, MRI etc.

Demonstrate

a) Measurement of aerodynamic parameters and aerodynamic analysis
b) Carry out and interpret the acoustic measures of voice on two recorded samples and correlate with the perceptual analysis
c) Demonstration of therapy techniques for disorders of voice, cognitive communication disorders, literacy disorders.
d) Perform assessment of phonological awareness, visuospatial skills, orthographic skills on typically developing children.
e) Perform assessment of typically developing child using assessment protocols for learning disability

f) Demonstrate process of differential diagnosis for persons with aphasia and cognitive communication disorders.

Do

a) Carry out complete evaluation, write detailed evaluation report, counsel persons with communication disorders and their families with reference to the following:
   - Five persons with voice disorders including perceptual assessment using different scales, acoustic analysis of voice and patient reported outcome measurement.
   - Three persons with aphasia using appropriate screening, diagnostic (WAB/ BDAE etc.) and performance tool.
   - Three persons with adult cognition communication disorders using appropriate screening (ACE/MMSE/CLQT etc.), diagnostic (ABCD/CLAP etc.) and performance tool
   - Clinical swallow examination for three persons with concerns in swallowing.
   - Three children at risk for language learning disability
   - Plan and carry out appropriate intervention program for children and adults with voice, literacy disorders and cognitive communication disorders.
   - Plan and carry out AAC intervention program for an individual with cognitive communication disorders.

Evaluation

a) Internal evaluation: A continuous formative assessment will be done based on clinical activities in each rotation for every semester. It shall be based on attendance, clinical diary, log book and learning conference.

b) External evaluation: A university exam will be conducted at the end of the semester involving clinical population, spot test, OSCE, records, viva-voce

SLP 301 M : Disorders of Fluency and Prosody

Hours 60 **Marks: 100 - Credits: 4**

Objectives: After completing the course, the students will be

a) aware of the recent updates stuttering and its development
b) assess aspects of fluency and dysfluency based on research evidence,
c) apply the principles of evidence bases practice in managing fluency disorders,
d) apply aspects of prosody in speech therapy for fluency disorders

Unit 1: Overview of Fluency and Theoretical Concepts Related to Stuttering

a) Development of components of fluency and various dimensions of fluency disorders - recent advances in conceptualizing fluency, disfluency and related phenomena
b) Research evidences about constitutional factors in stuttering - Theories of stuttering – (linguistic, articulatory, audiological, laryngeal and genetic predisposition)
c) Neuro anatomical, neuro-physiological bases of fluency disorders
d) Cortical activation patterns in stuttering - a neuromotor problem; Stuttering as a timing disorder; feedback and feed-forward models of stuttering

Unit 2: Different Types of Fluency Disorders

a) Typical disfluency and developmental stuttering; Stuttering as a co-morbid condition in children and adults
b) Cluttering- characteristics and etiologies
c) Neurogenic stuttering – characteristics and etiologies
d) Psychogenic and other types of fluency disorders

Unit 3: Assessment of Fluency Disorders in Children and Adults

a) Preliminaries to Assessment (client's need, cultural considerations, stuttering behavior, speech naturalness, continuing assessment), Differential diagnosis; Objective and Subjective (ICF based) tools for assessment in children and adults; Self-rating and quality of life assessment
b) Electrophysiology in the evaluation of fluency disorders
c) Functional radiological studies of stuttering
d) Cognitive dimension of stuttering

Unit 4: Management and Recovery Related Issues of Fluency Disorders in Children and Adults

a) Current evidenced based approaches to management of fluency disorders; Behavioural and work-place management
b) Tele-practice for delivery of intervention; use of technology in assessment and management
c) Counselling - including parents and teachers, Self-help and advocacy groups
d) Relapse and spontaneous recovery pattern in fluency disorders; Efficacy and outcome measures of fluency therapy; Ethics in research and management of stuttering

Unit 5: Prosody in Assessment and Management of Stuttering

a) Suprasegmental aspects of Speech (Rate, Rhythm, Intonation, Stress, Prosody)
b) Acoustic aspects of prosody and its assessment, prosody in speech disorders
c) Prosodic variations across languages, their uses and applications in supra normal use (such as public speaking, news reading, etc)
d) Prosody in management of stuttering and other speech disorders

Recommended Reading

a) Bloodstein, O., Ratner, N. B. & Brundage, S. B. (2021). A Handbook on Stuttering (7th Ed.). USA: Plural Publishing Inc.
b) Guitar, B. (2024). Stuttering-An Integrated Approach to its Nature and Treatment. (6th Ed.). Baltimore, Lippincott Williams & Wilkins. (available online)
c) Hirst, D. (2016). Speech Prosody: from Acoustics to Interpretation. Springer Berlin Heidelberg.
d) Logan, K. J. (2019). Fluency Disorders: Stuttering, Cluttering, and Related Fluency Problems. United States: Plural Publishing, Incorporated.
e) Maruthy, S., & Kelkar, P. (Eds.). (2023). Understanding and Managing Fluency Disorders: From Theory to Practice. Taylor & Francis Publishing.
f) Packman, A., Attanasio, J. S. (2017). Theoretical Issues in Stuttering. United Kingdom: Taylor & Francis.
g) Ward, D. (2017). Stuttering and Cluttering (Second Edition): Frameworks for Understanding and Treatment. United Kingdom: Taylor & Francis.

SLP 302 M : Neurogenic Speech Disorders

Hours 60 **Marks: 100 - Credits: 4**

Objectives: After the completion of the course, the students will be able to

a) explain the neuroanatomical and physiological correlates of speech motor control,
b) apply principles of evidence based practice in the assessment and management of motor speech disorders in children and adults, and
c) function as a member of team care for management for motor speech disorders in children and adults

Unit 1: Models of Speech Motor Control

a) Early models of speech motor control: Closed Loop, Open Loop, Associative Chain and Serial Order Model, Schema Theory, Task Dynamic Model, Mackay's Model, Gracco's Model; Recent models of speech motor control: DIVA Model
b) Other speech motor control models with reference to children
c) Application of models of speech motor control to motor speech disorders in children and adults.
d) Age related changes in speech motor control

Unit 2: Assessment and Management of Dysarthria in Adults

a) Perceptual methods: Rating scales and tests for speech parameters, prosody, speech intelligibility, comprehensibility and naturalness.
b) Recent advances in use of aerodynamic and acoustic analysis of speech among persons with dysarthria
c) Other physiological analyses of speech subsystems in persons with dysarthria, role of team in assessment
d) Evidence based practice guidelines on specific treatment strategy for dysarthria in adults

Unit 3: Assessment and Management of Dysarthria in Children

a) Evidence based practice for behavioral approaches to assess and correct posture, tone, and strength and sensori-motor difficulties in children with dysarthria
b) Specific behavioral approaches in developmental dysarthria: McDonald's Approach and Hardy's Approach
c) Application of facilitatory approaches (neurodevelopmental approach and methods for reflex inhibition) in the management of developmental dysarthria
d) Evidence base for facilitatory approaches

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

a) Assessment for suspected apraxia of speech, apraxia of speech and non-speech apraxia: Perceptual assessment protocols; physiological assessment of speech in adults with AOS; acoustic analysis of speech in AOS.
b) Intervention methods for non-verbal apraxia
c) Intervention for AOS in adults: specific, programmed, and nonspecific approaches – Evidence based practice
d) Motor learning principles – applications in intervention of AOS

Unit 5: Assessment and Management of childhood apraxia of Speech (CAS)

a) Current status of nature of CAS as primary disorder and CAS as co-morbid condition in other neurodevelopmental disorders
b) Assessment protocols for CAS and differential diagnosis from other speech sound disorders
c) Current evidenced based intervention approaches for CAS
d) Motor learning principles – applications in intervention of CAS

Recommended Reading

a) Burda, A. N. (2011). Communication and Swallowing Changes in Healthy Aging Adults. Chapter 7 & 8. MA, Jones & Barlett Learning.
b) Duffy, J. R. (2019). Motor Speech Disorders: Substrates, Differential Diagnosis and Management, Fourth Edition. E-Book. Elsevier Health Sciences.
c) Fish, M., Skinder-Meredith, A. (2022). Here's How to Treat Childhood Apraxia of Speech. United States: Plural Publishing, Inc
d) Freed, D. B. (2023). Motor Speech Disorders: Diagnosis and Treatment, Fourth Edition. United States: Plural Publishing, Incorporated.
e) Hoepner, J. K., Blake, M. L. (2023). Acquired Neurogenic Communication Disorders: An Integrated Clinical Approach. United States: Plural Publishing, Inc.
f) Maassen B. & Van Lieshout P. H. H. M. (2010). Speech motor control: new developments in basic and applied research. Oxford University Press.
g) Maassen, B., Kent, R., Peters, H., Lieshout, P.V., & Hulstijn, W. (Eds.) (2009). Speech Motor Control in Normal and Disordered Speech. NY, Oxford University Press.
h) Manasco, M. H. (2014). Introduction to Neurogenic Communication Disorders. MA, Jones & Barlett Learning.
i) McNeil, M. R. (2008). Clinical Management of Sensorimotor Speech Disorders (2nd Ed.). New York, NY, Thieme.
j) Webb W. G. & Abou-Khalil R. (2023). Neurology for the speech-language pathologist (Seventh). Elsevier.
k) Yorkston, K. M., Beukelman, D. R., Strand, E. A., & Hakel, M. (2010). Management of Motor Speech Disorders in Children and Adults (3rd Ed.). Austin, Texas: Pro-Ed

SLP 303 MC : Genetics of Speech-language

Hours 30 **Marks 50 : Credit 2**

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

a) understand the genetic processes underlying speech-language and apply the same in the practice of speech-language pathology
b) explain the genetic aberrations of speech-language disorders,
c) have a theoretical knowledge of methods in genetic assessment
d) describe the different genetic disorders/syndromes associated with speech-language disorders
e) advice caregivers on the management of genetically base deviant speech-language conditions in terms of gene therapy and genetic counseling

Unit 1: Basic Concepts and Terminologies in Genetics

a) Principles of genetics – Genes, human chromosome, cytogenetics, mitosis and meiosis, numerical aberrations, structural aberrations, the sex chromosome anomalies.
b) Role of environmental exposure, in-utero exposure, cultural experience, stochastic variations in genetic expressions
c) Genetic inheritance patterns – Mendelian, non- Mendelian, penetrance and expressivity, chromosomal, multifactorial, Introduction to pedigree construction, traits, environment – genetic interactions influencing fetus.
d) Ethical, social, and legal considerations

Unit 2: Genetic Testing and Analysis

a) Identification of genetic components: Twin studies, family studies, segregational analysis
b) Identification of loci and genes - Protein approaches, candidate gene approach, positional approach, association studies, animal models, verification of analysis
c) Basic and advanced methods in genetics: cloning, molecular genetics, epigenetics, pedigree analysis, study of DNA, Heritability estimation
d) Medical significance of genetic testing and analysis – diagnostics, genetic counseling, prognostics and therapeutics

Unit 3: Genetic Aspects of Communication Disorders

a) Craniofacial anomalies and clefting
b) Ear development, malformations and genetic deafness
c) Genetic language disorders- SLI, Specific Reading disability, language disorders in elderly due to genetic dispositions
d) Genetics and stuttering, and other communication disorders

Recommended Reading

a) Gangane, S. D. (2021). Human Genetics (6th ed.). India: Elsevier.
b) Gerber (2001). Handbook of Genetics and Communicative Disorders. San Diego: Elsevier Science & Technology Books.
c) Golper, L. A. C., Klaben, B. K., Miller, C. K. (2018). Medical Speech-Language Pathology: A Desk Reference, Fourth Edition. United States: Plural Publishing, Incorporated.
d) Jung, J. H. (2010). Genetic Syndromes in Communication Disorders (2nd ed.). Pennsylvania

State University: Pro Ed.
e) Leblanc, E. M. (2012). Needs Analysis of Genetics and Genomics in Communication Sciences and Its Disorders: Evidence for Change. United States: Columbia University
f) Shprintzen, R. J. (1997). Genetics, Syndromes and Communication Disorder. New York: Singular Publishing Group Inc.
g) Shprintzen, R. J. (2000). Syndrome Identification for Speech-language Pathologists: An Illustrated Pocket Guide. United States: Singular Publishing Group.

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SLP 304 M: Clinicals in Speech-language Pathology

Hours 180+ **Marks 100: Credits 6**

General Considerations

a) Post-graduates (PG) must complete the clinical practicum during rotations in clinics. The clinical rotations will provide focused exposure on clinical practice with specific populations (listed below) with communication and swallowing disorders across the lifespan.

b) The thrust areas in PG clinics shall be clinical practice with children and adults having:
- Voice disorders including those such as professional voice users, transgenders, and laryngectomee
- Stuttering and other fluency disorders
- Speech sound and phonological disorders (Cleft lip and palate and other disorders)
- developmental language disorders (including those due to hearing impairment -those with cochlear implants, and other hearing devices) and/or multiple handicap)
- neuro-communication disorders in acute care settings (NICU/ PICU/ICU), out-patient (Child development unit/ Early intervention centre/special school/pre- and regular schools), and in- patient clinic settings (paediatric wards/wards for adults and geriatrics, rehabilitation units, etc)
- non-verbal communication via augmentative and alternative tools/strategies (AAC)
- swallowing and feeding disorders due to cancer and its treatment, trauma, developmental and acquired neurological issues, etc
- home-based intervention for communication and swallowing disorders via in-person or tele- mode

c) PGs must be exposed to advanced methodologies (use of gadgets and tools), varied service delivery systems (individual, group, camp based, and tele/mobile based), and evidence-based practices in assessment and management of communication and swallowing disorders. Care must be taken to facilitate clinical exposure and training in addition to those focused in the undergraduate program.

d) An additional emphasis should be on facilitating interaction with professionals in transdisciplinary management team (medical and non-medical).

Objectives: At the end of clinical postings, the PGs should be able to

a) carry out complete and appropriate speech language and swallowing evaluation, counsel and manage persons with communication and swallowing disorders.
b) apply, show (in a clinical diary/log book), and perform the following on patients/clients.

The below mentioned items in 'Knowhow, demonstrate and do' are specifics related to clinical performance in the current semester. These are over and above listed above in point (b) of general considerations in clinicals

Knowhow

a) Differential diagnosis of fluency disorders and motor speech disorders
b) Assessment of neurodevelopmental speech disorders in infants and young children (birth-to-two years) as part of child development unit.

c) Modified barium swallow examination
d) Flexible endoscopic examination of swallowing as part of team assessment
e) Identify reports of persons with neurogenic speech disorders in tests such as EEG, CT scan, MRI etc.
f) Reversible and irreversible conditions that causes neurogenic /motor speech disorders.
g) Rights and privileges of persons with neurogenic communication disorder
h) The certification procedures for persons with communication disorder
i) The use of mobile apps for assessment and management of different motor speech disorders in adults and children
j) Scope of practice of different medical and rehabilitation professionals in transdisciplinary team

Demonstrate

a) Perform assessment of fluency and neuro/motor speech disorders (informal and formal methods)
b) Demonstrate process of differential diagnosis for persons with fluency and neuro /motor speech disorders.
c) Demonstration of therapy techniques for adults with fluency and neuro/motor speech disorders, all types of dysarthria and dysphagia
d) Conduct assessment and management for child/adult with fluency and neuro/motor communication disorders using tele-practice
e) Prepare a report for persons with fluency and neuro/motor speech disorders for medico-legal purposes

Do

a) Complete evaluation, write detailed evaluation report, counsel persons with communication disorder and their families as required for the following:
   - Persons with stuttering using standardized tests (SSI, SPI etc.), including assessment of rate of speech, type, percent of dysfluencies, and quality of life measures.
   - Persons with neuro/motor speech disorders at bed side
   - Persons with dysarthria using appropriate screening, diagnostic and performance tool
   - Persons with other motor speech disorders including perceptual evaluation of speech subsystems, speech intelligibility assessment, instrumental assessments for respiration or voice and quality of life assessment
   - Children and adults with concerns in swallowing and feeding
b) Plan and carry out appropriate intervention program for children and adults with fluency disorders.
c) Plan and carry out appropriate intervention program for children with neurological disorders
d) Plan and carry out early communication stimulation program for children ‘at-risk’ for motor and neuro-developmental delays.
e) Plan and carry out intervention program for adults with neurogenic speech disorders, and other communication disorders, and dysphagia

Evaluation

a) Internal Assessment: A continuous formative assessment will be done by the faculty/clinical staff based on clinical activities of the student throughout the semester..

b) Examination at the end of the semester will include work with the clinical population, spot test, OSCE, records, viva-voce

Semester 4

SLP 401 M : Augmentative and Alternative Communication

Hours 60 **Marks 100 : Credits 4**

Objectives: At the end of the course, the student will be able to

a) identify and classify the different systems of augmentative and alternative communication (AAC)
b) decide on approaches and methods for recommending AAC
c) assess individuals with complex communication needs and select appropriate AAC strategies for them
d) use evidence based rationale for selecting management strategies with AAC,
e) select appropriate technology in the Indian context, and identify issues for research

Unit 1: Types, Classification and Description of AAC

a) Definition, history, need and classification of AAC
b) Types of AAC
c) Aided systems and symbols in AAC: different types and their details
d) Unaided systems and symbols in AAC: different types and their details

Unit 2: Technology in AAC

a) Communication boards: types and decision making
b) Low and high tech aids & devices: types, interfaces, selection and decision making
c) Importance of team approach in AAC technology

Unit 3: Assessment for AAC Candidacy

a) Assessment of AAC candidates: models, standard tests and scales
b) Assessment of abilities in the following domains:
   - Physical/ motor and seating requirements
   - Cognition
   - Vision & hearing
   - Sensory Perception

Unit 4: AAC Intervention: Principles and Procedures

a) General principles and strategies in aided AAC and unaided AAC
b) Selection of vocabulary and symbol representation of the vocabulary: - types of vocabulary, factors affecting choice of vocabulary
c) Strategies for selection of symbols in AAC, their types and factors affecting decision making: direct selection, scanning, encoding, word prediction
d) Specific intervention strategies for children with complex communication needs: mental retardation, cerebral palsy, child language disorders and children with dual and multiple disabilities.
e) Specific intervention strategies for adults with complex communication needs:
   - Temporary conditions: laryngectomy, voice disorders
   - Degenerative and non-degenerative conditions, aphasia, TBI
   - Structural disorders and disorders affecting speech intelligibility

Unit 5: Contemporary Issues and Evidenced Based Practices in AAC

a) Adaptation of AAC in different set ups: home, schools, work place, and other social situations
b) Training in the use and application of AAC for parents and caregivers
c) Current status of AAC in India and scope for research
d) Evidence based practices and outcome measures in AAC

Recommended Reading

a) Alant, E. (2017). Augmentative and Alternative Communication: Engagement and Participation. San Diego, CA : Plural Publishing, Inc.
b) Beukelman, D. R., Mirenda, P., & Paul, H. (1998). Augmentative and Alternative communication – Management of severe communication disorders in children and adults. Baltimore: Brookes Publishing Co
c) Beukelman, D. R., & Janice, C. (2020). Augmentative and Alternative Communication: Supporting Children and Adults with Complex Communication Needs. Baltimore : Paul H. Brookes Publishing Co., Inc.
d) Hall, N., Juengling-Sudkamp, J., Gutmann, M L., & Cohn, E. R. (2020). Tele-AAC: Augmentative and Alternative Communication through Telepractice. San Diego, CA : Plural Publishing
e) Karanth, P., Roseberry-McKibbin, & James, P. (2017). Intervention for Toddlers using Augmentative and Alternative Communication: Practical Strategies. San Diego, CA : Plural Publishing Inc.
f) Karanth, P., Roseberry-McKibbin, & James, P. (2017). Intervention for Preschoolers using Augmentative and Alternative Communication: Practical Strategies. San Diego, CA : Plural Publishing Inc.
g) Loncke, P. (2022). Augmentative and Alternative Communication: Models and Applications, 2nd Ed. San Diego, CA : Plural Publishing, Inc.
h) Mani, M.N.G., Gopalkrishnan, V., & Amaresh, G. (2001). Indian Sign Language Dictionary. Germany, CBM International.

SLP 402 M : Dissertation

Hours 300+ **Marks 100 : Credits 10**

Though dissertation, a report on the results of an experimental research, is shown only Semester 4, students are free to initiate the work in Semester 3 itself utilizing the free time.

SLP403 M: Clinicals in Speech-language Pathology

Hours 180+ **Marks 100: Credits 6**

General Considerations

a) Post-graduates (PG) must complete the clinical practicum during rotations in clinics. The clinical rotations will provide focused exposure on clinical practice with specific populations (listed below) with communication and swallowing disorders across the lifespan.
b) The thrust areas in PG clinics shall be clinical practice with children and adults having:

- Voice disorders including those such as professional voice users, transgenders, and laryngectomee
- Stuttering and other fluency disorders
- Speech sound and phonological disorders (Cleft lip and palate and other disorders)
- developmental language disorders (including those due to hearing impairment -those with cochlear implants, and other hearing devices) and/or multiple handicap)
- neuro-communication disorders in acute care settings (NICU/ PICU/ICU), out-patient (Child development unit/ Early intervention centre/special school/pre- and regular schools), and in- patient clinic settings (paediatric wards/wards for adults and geriatrics, rehabilitation units, etc)
- non-verbal communication via augmentative and alternative tools/strategies (AAC)
- swallowing and feeding disorders due to cancer and its treatment, trauma, developmental and acquired neurological issues, etc
- home-based intervention for communication and swallowing disorders via in-person or tele- mode

c) PGs must be exposed to advanced methodologies (use of gadgets and tools), varied service delivery systems (individual, group, camp based, and tele/mobile based), and evidence-based practices in assessment and management of communication and swallowing disorders. Care must be taken to facilitate clinical exposure and training in addition to those focused in the undergraduate program.
d) An additional emphasis should be on facilitating interaction with professionals in transdisciplinary management team (medical and non-medical).

Objectives: At the end of clinical postings, the PG should be able to

a) carry out complete and appropriate speech language and swallowing evaluation, counsel and manage persons with communication and swallowing disorders.
b) apply and show (in a clinical diary/log book), and perform the following on patients/clients.

The below mentioned items under 'Knowhow, demonstrate and do' are specifics related to clinical performance in the current semester.

Knowhow

a) Assess candidacy for AAC
b) Procedure to select appropriate AAC
c) Personalize AAC systems

Demonstrate

a) Practice and learn to use the strategies of direct selection, scanning, encoding and word prediction in a communication board/book or aided AAC system in simulated situation
b) Learn to operate non-tech, low-tech and high-tech AAC aids
c) Use of AAC for adults with communication disorders (e.g., alphabet supplementation board, software applications)

Do

a) Plan and carry out intervention program for a child as well as an adult with language disorder using AAC
c) Plan and carry out intervention program for a child as well as an adult with multiple handicap using AAC

Evaluation

a) Internal Assessment: A continuous formative assessment will be done by the faculty/clinical staff based on clinical activities of the student throughout the semester..

b) Examination at the end of the semester will include work with the clinical population, spot test, OSCE, records, viva-voce

Annexure 2

Infrastructure requirements for M.Sc (SLP) program
(Academic year 2024-25 onwards)

The following are the minimum requirements for starting/continuing a 12 student-intake M.Sc (SLP) program. This requirement is over and above the stipulated infrastructure (faculty, clinical staff) for other speech and hearing program in a given institute unless otherwise stated.

This statement on infrastructural requirement shall override all other statements/documents/guidelines on the topic issued by the Council.

Human Resource Requirement

Requirement of scientific / technical / administrative staff for the M.Sc (SLP) program with an intake of 12 students per year shall be as follows (see the notes below the table):

Type	Designation	No.
Core Faculty	Professor – Speech-language Pathology	1
	Associate Professor – Speech-language Pathology	1
	Assistant Professors – Speech-language Pathology	2
Clinical Staff	Speech-language Pathologist - Gr. I	1
Allied Faculty	Asst. Professor in Linguistics	1
	Asst. Professor in Statistics	1
Allied Clinical staff	Clinical Psychologist	1
	Oto-laryngologist	1
	Neurologist	1
Supporting staff – Technical	Electronics Engineer	1
	Bio-medical / Computer technician	1
	Library & Information Officer	1
	Library Assistant	1
Supporting staff- Admin.	Secretary - Academics	1
	Secretary - Clinic	1
	Secretary - Admin	1

Note 1: Core faculty to student ratio should always be 1:3 (one faculty member for every 3 students). The number of core faculty shall be the basis for determining intake. However, the intake for M.Sc programs shall not exceed 15.

Note 2: Allied faculty, allied clinical staff, supporting staff – tech and supporting staff - admin can be part time functionaries, can be shared with other programs at the institute, and their appointment can be guided by the requirements in a given semester.

Note 3: The M.Sc (SLP) program can only be conducted by an independent institute/ college/ department in a University / department in a hospital / rehabilitation unit, with a full-time speech-language pathologist, or aspeech-language pathologist audiologist & audiologist as its head/ coordinator (administrative / academic / clinical). The head of the program should possess a doctorate in the core area.

Note 4: Core areas refer to Speech-language pathology

Faculty and Professional qualification in the core areas

Designation	Qualifications
Professor	**Essential** a) M.Sc (SLP), M.Sc (Sp & Hg) / or M.ASLP) or its equivalent b) PhD (in the core area*) c) 10 years teaching experience at PG/UG level d) Minimum of five publications with cumulative impact factor of 05. e) Valid RCI registration **Desirable** Experience of running under-graduate training programs
Associate Professor	**Essential** a) M.Sc (SLP) / M.Sc (Sp & Hg) / M.ASLPor its equivalent b) 8 years teaching experience at PG/UG level c) Minimum 5 publications with a cumulative impactfactor of 4. d) Valid RCI registration **Desirable:** a) Ph.D (in the core area*) b) Experience of running under-graduate training programs
Assistant Professor-Speech Language Pathology	**Essential** a) M.Sc (SLP) / M.Sc (Sp & Hg) / M.ASLPor its equivalent b) 2 years teaching/ clinical / research experience c) Valid RCI registration **Desirable:** a) Ph.D (in the core area*) b) Publications
Speech Pathologist Grade I	**Essential** a) M.Sc (Sp-lang Pathology / M.Sc (Sp & Hg) / M.ASLP or its equivalent b) Valid RCI registration **Desirable**: 1 year experience in the field

Note 1: *Speech-Language Pathology
Note 2 : Pay and emoluments for all faculty posts shall be on par with UGC norms.
RCI norms shall apply for all other clinical and technical posts

Clinical

The institution should have facility for diagnosis, management and rehabilitation of all types of speech, language, and swallowing disorders in clinical population across life span.

Size of the clinical population shall be 2 per student per semester in each of the following main clinical areas: child language disorder, adult language disorder, fluency disorders, voice and voice related disorders, speech sound disorders, and dysphagia, This requirement of clinical population shall be over and above that required for other speech and hearing training programs at the institute.

Library

Library should accommodate at least 30% of the staff and students of the institute at any given time.

Library should have internet and photocopying facilities.

The participating institution shall ensure that books mentioned under the 'Recommended reading' are available, as far as possible. There shall be addition of at least 3 books every year.

Books and journals can be either hard copies or e-books, but accessible to all

There should be at least 2 journals at the start of the M.Sc (SLP) program over and above that required for B.ASLP program at the institute. The institution should subscribe to two more journals in the core area every five years.

Library Staff*

a) Library and Information Officer / Library Assistant - 1
Qualification: B.Lib Sci with one year experience in managing a technical library

* Library staff can be common for all the courses at a given institute

Space

Sl.No.	Category	Size	Number (For a batch of 12 students)
a)	Class Rooms	Space @ 10 sq. ft per student + 20 Sq. ft for the teacher: Room with a minimum area of 300 sq. ft.	1 class room for a batch of 12 students
b)	Seminar hall	Space to accommodate 50% of total student strength	1 hall for a batch of 12 students
c)	Computer lab/multipurpose hall	Space to accommodate 50% of total student strength	1 computer lab for a batch of 12 students
d)	Room for reception where patients are registered.	10' x 10'	1 room for a batch of 12 students
e)	Room for case history, diagnostic room and interviews	6' x 8'	4 rooms for a batch of12 students
f)	Speech Lab (Quiet Room) for diagnostic purposes.	15' x 20'	1 room for a batch of 12 students
g)	Recording room (Sound proof)	8' x 10'	1 room for a batch of 12 students
h)	Speech Therapy Rooms/ Cabins (completely partitioned/sound isolated)	6' x 8'	4 rooms for a batch of 12 students
i)	Board Room	15' x 20'	1 room

j)	Individual work space (with provision for storage facilities)	10’ x 10’	1 room for every 2 faculty/staff members
k)	Academic/administrative office	10’ x 10’	1
l)	Principal’s Office room	10’ x 10’	1
m)	Sanitary facilities	Separate facility for males and females, staff/students and clinical population	
n)	Hostel	Separate hostel for Men and Women withdining facility. Accommodation for at least 50% of the student population.	
o)	Barrier free access		
p)	Space for recreation - both indoor and outdoor		

Note: All categories of space mentioned above except class rooms can be common to all other speech and hearing training programs in the institute

Equipment - Speech-Language Pathology (Minimum for a batch of 12 students)

Sl. No.	Equipment	For a batch of 12 students
a)	Speech and Language Tests (English and local languages)(Minimum two original test material per semester must be procured)	As per course requirement - See Table 1 for different tests
b)	Proforma	As per course requirement
c)	Speech Therapy material (in local language and English)	As per course requirement
e)	Digital voice recorders	2
f)	Video cameras for audio-visual recording	1
g)	Spirometer and system for aerodynamic assessment	1
h)	Computer PC-AT with VGA Color Monitor & printer for clinic administration	2
i)	Software for diagnosis/ therapy work	1
j)	Stroboscope (by possession in department or by access in the parent institution)	1
k)	Flexible scope for voice and swallowing assessment (by possession in department or by access in the parent institution)	1
l)	Electroglottograph	1
m)	System for aerodynamic assessment	1
n)	Tools for assessment of swallowing	

Note : Equipments and tests listed here can be common with other training programs

Audio-visual Instruments, Furniture in class rooms, clinical areas, labs and other administrative areas and internet access: as required.

Table 1 : List of original tests

1) WAB - Western Aphasia battery (English and Regional language/s)
2) BDAE-Boston diagnostic Aphasia Examination (English and Indian language)
3) LPT-Linguistic profile Test- (English and Regional language/s)
4) RTT-Revised Token Test – (English and Regional language/s)
5) MIRBI-Mini- Mini Inventory of Right Brain injured (English version)
6) PICA- Porch Index of communicative ability- (English and Regional language/s)
7) ABCD- Arizona Battery for communication disorders of dementia (English)
8) CLAP- Cognitive linguistic assessment protocol (English and Indian languages)
9) CLIP- Cognitive linguistic intervention program ((English)
10) CLQT-Cognitive linguistic quick test
11) BAT-Bilingual aphasia test- ((English and Regional language/s)
12) SSI- Stuttering severity Instrument
13) SPI- Stuttering predication instrument for young children
14) ABA- Apraxia Battery for Adult
15) FDA- Franchy Dysarthria Assessment
16) Perceptual Speech intelligibility rating (AYJNIHH, 2003)
17) Perceptual rating scale (SRMC, Chennai)
18) Consensus Auditory Perceptual Evolution of voice (CAPE-V)
19) Voice –Disorder Outcome Profile (V-DOP) (English, & Hindi) or Voice HandicapIndex
20) Indian Scale for Assessment of Autism (ISAA)
21) Early Reading Skills (ERS)
22) Reading Acquisition Profile in Indian languages
23) Early Literacy Screening Tool (ELST)
24) Attention Deficit Hyperactivity Disorder checklist
25) Autistic Behavior Composite Checklist Profile (ABCCP26)
26) MAAT-6: Manual for Adult Aphasia Therapy
27) LEAP-IQ- Language Efficiency and Proficiency Indian Questionnaire
28) Treatment Manual in English for treatment of dyslexia
29) Dyslexia Assessment Profile for Indian Children (DAPIC)
30) Protocol for Appraisal of verbal Praxis in typically developing children
31) Comprehensive Language Assessment Tool for children (3-6 Years)
32) Articulation Test in regional language/ national language /English
33) Tests for evaluation of cluttering
34) Tests for evaluation of dysphagia
35) Tests like REELS, 3DLAT, SECS, Assessment of Language Development (ALD

Suggestive Reading (Indian Authors)

Sr.No	Title	Author	ISBN
1	Coursebook on scientific and professional writing in speech - language pathology	Hegde , M N	1565932609
2	Coursebook on aphasis and neurogenic language disorders.	Hegde , M N	1565932633
3	Hegde`s PocketGuide to Communication Disorders	Hegde, M.N.	978-1944883140
4	Fluency and its Bases	Savithri, S. R.	978-1536185355
5	Syntactic Performance of Telugu Speaking School going Children with Hearing Impairment	Santhi Prakash S. & Varnasi Lalini.	978-3659207693
6	Research methodology - a brief survey	Kumar, Pradeep	978-9380833378
7	Reserach methodology and statistical tecniques	Gupta, Santosh.	8171005012
8	Research methodology	Manoharan, P K	978-8131305300
9	Research methodology	Singh, Yogesh Kumar.	978-8176489638
10	Research methodology	Jha, Avdhesh S	978-8131310632
11	Research methodology	Bhatt, Dipti P	978-8131310854
12	Research methodology	Singh, S R	978-8131313756
13	Research methodology	Pandya, Shefali.	978-8131316054
14	Research methodology: methods and techniques	Kothari, C R	8122415229
15	Research methodology in education	Serto, Manilei,	978-8181161727
16	Methodology and techniques of educational research	Sharma, Yogendra K.	978-8184572643