Annexure 40.4(a)

Avinashilingam Institute for Home Science and Higher Education for Women
(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category A by MHRD)
Re-accredited with A++ Grade by NAAC. CGPA 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Conceptual Framework of Curriculum
UG Programme
(With Language for one semester)
Bachelor in Audiology and Speech Language Pathology (B. ASLP)
(For Students admitted from 2022-2023 onwards)

Sl. No.	Semester	Course / Components	Instruction hrs./week/ Course	Number of Courses	Credit / Course	Total Credits
I	2	**Part-I** Tamil/Hindi/French	3	1	3	3
II	4	**Part-II** English	3	1	3	3
III	1-6	**Part-III** Core Course(Theory)	3-5	21-28	3-5	65-80
	2-6	Practical (1-2 per semester)	3-9	8-12	3-6	40-50
	1	Clinical observation	3-6	2	2-4	4-8
	5	Self Study Course	1	1	4	4
	5	❖ Computer Based Test (CBT) (fundamentals/Principles of domain subject)	1	1	2	2
	7	❖ Internship Project	6	1	2-4	4
	7-8	❖ Internship* In Service Training, ❖ Internship Practicals	15-20	2-4	6-10	30-35
	1-4	**Discipline Specific Elective (DSE)Courses** ❖ Allied courses One course / Semester Allied with practical MS Office (Subject related)	2T+3P 2T+2P 4T+1P 3T+1P	4	2-5	11-15
	5	**Generic Elective (GE) Course**	2	1	2	2
					Total	**174**

Part - IV COMPONENTS

Applicable for B.Sc. Physician Assistant, Bachelor of Optometry (B.Optom), Bachelor in Audiology and Speech Language Pathology (B.ASLP), Bachelor of Physiotherapy (BPT) students from the academic year 2023-2024 & onwards.

S.No.	Components	Subject Code	Semester	No. of Credits
I	**A. Ability Enhancement Compulsory Courses**			
	Environmental Studies	23BAES01	I	4
	Fundamentals of Research	23BAFU01	II	2
II	**Skill Based Compulsory Courses**			
	Communication Skills	23BSBCS1	III	2
	Soft Skills	23BSBSS1	IV	2
III	**Skill Based Elective Course**	1 Course	IV	2
IV	**Value Based Elective Course I**			
	NCC/	23BVBNC1-6	1-6	24 Credits*
	NSS/	23BVBNS1-6		6 Credits
	Sports/	23BVBSP1-6		6 Credits
	Medical Camp (for B.Sc. Physician Assistant and Bachelor in Audiology and Speech Language Pathology Students) /	23BVBMC1-6 /		6 Credits
	Eye Camp (for Bachelor of Optometry students) /	23BVBEC1-6 /		6 Credits
	Workstation Ergonomics (for Bachelor of Physiotherapy students)	23BVBWE1-6		6 Credits
	Clinical Posting (For Bachelor in Audiology and Speech Language Pathology Students alone)	23BVBCP1-5	2-6	5 Credits
V	**Value Based Elective Course II**	1 Course	III	2
			Total Credits	**38/20 / 43/25 (for B.ASLP)**

Bachelor in Audiology and Speech Language Pathology

Programme Outcomes

1. Apply possessed knowledge of fundamental subjects to solve different problems.
2. Analyze various research and scientific problems.
3. Design rehabilitation services with appropriate consideration to safety, economy, health and environmental considerations.
4. To incorporate significant clinical and professional training opportunities, experience with real patients in a supervised environment.
5. Use modern therapeutic techniques, resources, equipment's and software.
6. Apply their responsibilities in social and environmental context.
7. Exhibit professional ethics and norms in rehabilitation services.
8. Function individually and in multidisciplinary team.
9. Communicate effectively in both verbal and written forms.
10. Manage and implement public awareness and education program.
11. Practice the use of lifelong learning

Programme Specific Outcomes

1. To understand the concepts and to evaluate, diagnose and assess the severity of different disorders related to speech, language, swallowing and hearing.
2. To rehabilitate persons with speech, language, swallowing and hearing disorders across the life span.
3. To prevent speech, language, swallowing and hearing disorders and to counsel persons with disorders and their family members.

Scheme of Instruction & Examinations
(For students admitted from 2022-2023 & onwards)

Part	Course Code	Title of the Course / Component	Hrs. of Instruction		Scheme of Examination					
			T	P	Hrs. of Exam T	Hrs. of Exam P	CIA	CE	Total	No of Credits
Semester I										
III		**Core Course**								
	22BASC01	Communication Sciences	3	2	3		50	50	100	3
	22BASC02	Anatomy and Physiology of Speech and Hearing	5		3		50	50	100	3
	22BASC03	Clinical Psychology	4		3		50	50	100	3
	22BASC04	Linguistics and Phonetics	4		3		50	50	100	3
	22BASC05	Electronics and Acoustics	4		3		50	50	100	3
	22BASC06	Research Methods and Statistics	3		3		50	50	100	3
	22BASC07	Clinical Observation (Speech – Language Pathology)		3			50	-	50	2
	22BASC08	Clinical Observation (Audiology)		3			50	-	50	2
		Discipline Specific Elective (DSE) Course								
	22BASD01	**DSE I: Digital Health**	2	3	3		50	50	100	2
IV	22BXMC01	Medical Camp-I					100		100	1
Semester II										
I	22BLATA1/ 22BLAFR1/ 22BLAHI1	**Part-I** Tamil:- Pothu Tamil Thazh I-Tamil Ilakkiam French:- Fundamentals of French Hindi:-Grammar, Translation and General Essay.	3		3		50	50	100	3
		Core Course								
	22BASC09	Neurology	4		3		50	50	100	3

Part	Course Code	Title of the Course / Component	Hrs. of Instruction		Scheme of Examination					
			T	P	Hrs. of Exam		CIA	CE	Total	No of Credits
					T	P				
III	22BASC10	Speech-Language Pathology	4		3		50	50	100	3
	22BASC11	Audiology	4		3		50	50	100	3
	22BASC12	Practicals-I (Speech - Language Pathology)		8		3	50	50	100	4
	22BASC13	Practicals-I (Audiology)		9		3	50	50	100	4
		Discipline Specific Elective (DSE) Course								
	22BASD02	**DSE II:** Otolaryngology	2	2	3		50	50	100	3
IV	22BXMC02	Medical Camp-II					100		100	1
	22BXCP01	Clinical Postings-I					100		100	**1**
Semester III										
III		**Core Course**								
	22BASC14	Voice and its Disorders	4	1	3		50	50	100	3
	22BASC15	Speech Sound Disorders	4	1	3		50	50	100	3
	22BASC16	Diagnostic Audiology - Behavioral Tests	4	1	3		50	50	100	3
	22BASC17	Practicals-II (Speech-Language Pathology)		8		3	50	50	100	4
	22BASC18	Practicals-II (Audiology)		8		3	50	50	100	4
		Discipline Specific Elective (DSE) Course								
	22BASD03	**DSE III:** Amplification Devices	4	1	3		50	50	100	3
IV	22BXMC03	Medical Camp-III					100		100	1
	22BXCP02	Clinical Postings-II					100		100	**1**

Part	Course Code	Title of the Course / Component	Hrs. of Instruction		Scheme of Examination					
			T	P	Hrs. of Exam		CIA	CE	Total	No of Credits
					T	P				
Semester IV										
II		**Part II**								
	22BLEN02	English Language for Communication II	3		3		50	50	100	3
III		**Core Course**								
	22BASC19	Motor Speech Disorders in Children	4	1	3		50	50	100	3
	22BASC20	Child Language Disorders	4	1	3		50	50	100	3
	22BASC21	Diagnostic Audiology -Physiological Tests	4	1	3		50	50	100	3
	22BASC22	Practicals-III (Speech-Language Pathology)		7		3	50	50	100	4
	22BASC23	Practicals-III (Audiology)		7		3	50	50	100	4
		Discipline Specific Elective (DSE) Course								
	22BASD04	**DSE IV**: Implantable Hearing Devices	3	1	3		50	50	100	3
IV	22BXMC04	Medical Camp-IV					100		100	1
	22BXCP03	Clinical Postings-III					100		100	1
Semester V										
III		**Core Course**								
	22BASC24	Structural Anomalies and Speech Disorders	4	1	3		50	50	100	3
	22BASC25	Fluency and its Disorders	4	1	3		50	50	100	3
	22BASC26	Paediatric Audiology	4	1	3		50	50	100	3
	22BASC27	Aural Rehabilitation in Children	4	1	3		50	50	100	3
	22BASC28	Practicals-IV (Speech-Language Pathology)		6		3	50	50	100	4
	22BASC29	Practicals-IV (Audiology)		6		3	50	50	100	4

Part	Course Code	Title of the Course / Component	Hrs. of Instruction		Scheme of Examination					
			T	P	Hrs. of Exam T	Hrs. of Exam P	CIA	CE	Total	No of Credits
	22BASC30	Audiological and Speech Management (Self-Study)		1				100	100	4
	22BASC31	BASLP (Computer Based test)		1	1		100		100	2
		Generic Elective Course	2		3		100		100	2
IV	22BXMC05	Medical Camp-V					100		100	1
	22BXCP04	Clinical Postings-IV					100		100	1
Semester VI										
		Core Course								
	22BASC32	Motor Speech Disorders in Adults	4	1	3		50	50	100	3
	22BASC33	Language Disorders in Adults	4	1	3		50	50	100	3
	22BASC34	Aural Rehabilitation in Adults	4	1	3		50	50	100	3
	22BASC35	Audiology in Practice	4	1	3		50	50	100	3
III	22BASC36	Practicals-V (Speech - Language Pathology)		8		3	50	50	100	4
	22BASC37	Practicals-V(Audiology)		8		3	50	50	100	4
IV	22BXMC06	Medical Camp-VI					100		100	1
	22BXCP05	Clinical Postings-V					100		100	1
Semester VII										
		Core Course								
III	22BASC38	Internship Project		6						4
	22BASC39	In-service training in Speech Language Pathology		15			50			6
	22BASC40	In-service training in Audiology		15			50			6

Part	Course Code	Title of the Course / Component	Hrs. of Instruction		Scheme of Examination					
			T	P	Hrs. of Exam		CIA	CE	Total	No of Credits
					T	P				
Semester VIII										
		Core Course								
	22BASC41	Internship Practicals-VI (Speech Language Pathology)		18		3	50	50	100	10
	22BASC42	Internship Practicals VI (Audiology)		18		3	50	50	100	10
									Part I, II & Part III	**174**
									Part IV (Medical Camp + Clinical Postings)	**11**
									Total	**185**

Communication Sciences

Semester I **Hours of Instruction/week: 3+2**

22BASC01 **No of Credits: 3**

Objectives:

- To understand the basic concepts in speech, hearing, language and communication.
- To understand the basic concepts of hearing sensitivity and acoustics
- To acquire knowledge about historic aspects of audiology and speech language pathology

Part A-Speech Language Pathology

Unit I Speech, language and communication **15**

- Definitions of speech, language, communication, and their components
- Distinctions, similarities and functions of communication, speech and language
- Speech as an overlaid function
- Speech chain
- Normal development of speech & language
- Pre-requisites and factors affecting speech-language development
- Cultural and linguistic issues in communication; bi/multilingual issues

Unit II: Bases of speech and language **15**

- Overview of speech production – speech sub-systems
- Speech mechanism as a sound generator, vocal tract, periodic and aperiodic sounds
- Acoustic theory of speech production
- Social, cognitive, neurological, and genetic bases of speech and language

Part B-Audiology

Unit III Sound intensity and concept of decibel **15**

- Acoustic energy and power, absolute and relative units.
- Importance of reference sound intensity and intensity levels.
- Absolute and relative measurements and bel and decibels, sound pressure and decibel sound pressure levels.
- Relationship between intensity and pressure characteristics and application of decibels

Unit IV Audibility and Hearing. **15**

- Hearing range –intensity and frequency
- Up-down and staircase procedure of estimating minimum audible levels
- Minimum audible pressure and field, Missing six dB and related issues
- Reference equivalent threshold sound pressure levels and hearing levels
- Sensation levels, Threshold of pain, Most comfortable levels

Unit V Introduction to Audiology and Speech Language Pathology **15**

Part A: Speech and language

- Historical aspects of the field of speech-language pathology
- Development of speech and language pathology: Indian and global context
- Scope of practice in speech-language pathology Interdisciplinary nature of speech-language pathology

Part B: Audiology

- Audiology – historical aspects, development of instrumentation in audiology
- Development of audiology: Indian and global context
- Branches of audiology
- Scope of audiology

Total Hours 75

Recommended Books:

1. Bordon, G J., Harris, K S., & Raphael, L J. (2006). Speech science primer: Physi acoustics, & perception of speech. Lippincott-Williams & Wilkins.
2. SubbaRao, T A. (1992). Manual for developing communication skills. NIMH. ISBN: 81-86594-03-5
3. Speaks, C. E. (1999). Introduction to Sound: Acoustics for the Hearing and Speech Sciences (3 edition). San Diego: Cengage Learning.
4. Martin, F. N., & Clark, J. G. (2014). Introduction to Audiology (12 edition). Boston: Pearson.
5. Gelfand, S. A. (2009). Hearing: An Introduction to Psychological and Physiological Acoustics (5 edition). London: CRC Press.
6. Khara L. Pence, T., Laura M. & Justice (2011). Language Development: From Theory to Practice (2nd Ed.), Allyn & Bacon Communication Sciences and Disorders
7. Webb, W. G., & Adler, R. K. (2008). Neurology for the speech-language pathologist (5th Ed.). St. Louis, Mo: Mosby/Elsevier.

Course Outcomes: On the successful completion of the course, students will be able to

1. Understand the basic concepts of speech and hearing, the importance and development of speech and the factors affecting it.
2. Acquire knowledge about production of speech and its subsystems.
3. Gain knowledge about the basic units of acoustics, relationship, characteristics and its applications.
4. To obtain Hearing ranges and its procedures.
5. To know about Historical aspects, development and scope of speech and hearing.

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO1	M	L	H	H	M	L	M	H		M	M	H	H	L
CO 2	H		M	M	L	L	L	H	L	L	M	H	H	
CO3	H	M	L	L	M		M	H		L	L	H	H	L
CO4	H	M		L		M		H			L	H	M	
CO5	M	M	L		L	L	L	M	M	H	M	M	L	

Anatomy and Physiology of Speech and Hearing

Semester I **Hours of Instruction/week: 5**

22BASC02 **No of Credits: 3**

Objectives:

- To understand the anatomy of the auditory system and speech mechanism
- To obtain knowledge about physiology of hearing mechanism
- To acquire knowledge about functioning of speech and swallowing mechanism

Unit I Introduction **15**

- General anatomical terms
- Anatomical positions and planes of reference
- Cells, tissues and muscles
- Muscle connection and joints
- Tissue - vascular and neural

Unit II Embryology **15**

- Basic terminologies related to embryology
- Development of external ear
- Development of middle ear
- Development of Inner ear and the auditory system
- Five examples of embryonic anomalies affecting speech-language & hearing
- Development of respiratory structures
- Development of larynx
- Development of facial region and palate
- Development of tongue and teeth

Unit III: Anatomy and physiology of speech production systems and swallowing **15**

- Mechanisms of breathing with emphasis on speech breathing
- Supportive frame work of larynx
- Anatomy of larynx
- Anatomy of oesophagus
- Brief mechanisms of swallowing
- Mechanisms of phonation
- Anatomy of articulators and associated structures
- Contribution of articulatory structures to speech production
- Anatomy of resonatory mechanisms
- Contribution of resonatory mechanisms to speech production

Unit IV: Anatomy and Physiology of External and middle ear.

- Anatomy of the external ear
- Physiology of external ear including localization **15**
- Head shadow effect, inter-aural intensity and time differences
- Brief anatomy of temporal bone
- Anatomy of tympanic membrane and associate structures
- Anatomy of middle ear and ossicles
- Anatomy of eustachian tube and its middle ear muscles
- Physiology of eustachian tube
- Middle ear transformer function
- Physiology of middle ear muscles

Unit V: Anatomy and physiology of labyrinth **15**

- Anatomy of bony and membranous labyrinth
- Macro anatomy of cochlea
- Micro anatomy of cochlea
- Innervations and blood supply to cochlea
- Overview of theories of hearing
- Physiology of cochlea
- Electrical potentials of the cochlea
- Physiology of hearing through bone conduction
- Overview to physiology of balancing mechanisms
- Overview to anatomy of central auditory pathway

  Overview to central auditory mechanism

Total Hours 75

Recommended Books:

1. Seikel, J. A., King, D. W., & Drumright, D. G. (2010). Anatomy & Physiology for Speech, Language, and Hearing (4th edition). Delmar, Ceenage Learning, Division of Thomson Learning. NY.
2. Zemlin, W. R. (2010). Speech and Hearing Science: Anatomy and Physiology: International Edition (4 edition.). Boston: Pearson.
3. Chaurasia, B.D (2004). Human Anatomy, vol 3. Head Neck and Brain 4 th Eds, CBS Publishers and Distributors, New Delhi. ISBN 81-239-1157-2.
4. Kelley, M., Wu, D., & Fay, R. R. (Eds.). (2005). Development of the Inner Ear (2005 edition.). New York: Springer.

Course Outcomes: On the successful completion of the course, students will be able to

1. Understand the basics of anatomical terms and positions, and learn about cells, muscles, and tissues.
2. Acquire knowledge about the development of Ear and the auditory system.

3. Know the anatomy and physiology of subsystems of speech and swallowing
4. Obtain anatomy and physiology of external and middle ear
5. Gain knowledge about anatomy and physiology of cochlea, its innervations, electrical potentials and balancing mechanisms.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	H	H	H	H		H		L		M	L	M	L	
CO2	H	H	H	H						M	M	M	L	
CO3	H	H	H	H	M	M		L		M		M	L	
CO4	H	H	H	H		H				M	L	M	L	
CO5	H	H	H	H		H		L		M		M	L	

Clinical Psychology

Semester I
22BASC03

Hours of Instruction/week: 4
No. of Credits: 3

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

- To understand the scope of clinical psychology and its significance for speech and hearing concept of normality, abnormality and classification of abnormal behavior cognitive, motor, emotional and social development
- Theories of learning and therapy techniques based on learning principles
- Neuropsychological assessment and rehabilitation application of neuropsychology in the field of speech and hearing and basics of counseling

Unit I Introduction to Psychology **12**

- Introduction to psychology: definition, history and schools of psychology
- Scope of psychology
- Meaning and definition of clinical psychology
- Historical development, modern clinical psychology
- Significance of clinical psychology in health sciences
- Role of clinical psychology in speech and hearing
- Concept of normality
- Concept of abnormality
- Models of mental disorders: biological, psychological social models

Unit II Assessment procedures in clinical psychology **12**

- Methods in clinical psychology: case history, clinical interviewing, clinical observation, definition and types of psychological testing
- Assessment of cognitive functions
- Adaptive functions,
- Personality
- Behavioral assessment
- Classification of abnormal behavior
- History, need & rationale of classification
- Current classificatory system: DSM, ICD

Unit III Development psychology **12**

- Child and developmental psychology: meaning, definition and scope
- Meaning of growth, development & maturation
- Principles of child development
- Motor development: general principals of motor development
- Stages in motor development: early motor development, motor development during later childhood and adolescence, decline with age
- Cognitive development: growth from early childhood to adolescence
- Piaget's theory of cognitive development
- Emotional development

Unit IV Principles of learning and behavioral modification **12**

- Learning: meaning, definition and characteristics
- Theories of learning: introduction
- Pavlov's classical conditioning: experiments and principles
- Skinner's operant conditioning: experiments and principles
- Therapeutic techniques based on learning principles
- Skill behavior techniques
- Problem behavior techniques

Unit V Neuropsychology and its relevance to study of speech **12**

- Neuropsychology: introduction and definition
- Neuropsychological assessment
- Neuropsychological rehabilitation
- Application of neuropsychology in the field of speech and hearing
- Counselling: introduction and definition
- Types of counselling: directive and non- directive
  Characteristics of a good counsellor

Total Hours 60

Recommended Books:

1. Morgon C.T., King R.A., Robinson N.M. Introduction to Psychology. Tata McGraw Hill Publishing Co.
2. Anastasi, A. (1999). Psychological testing, London: Freeman
3. Baura, M (2004). Human Development and Psychlogy, Rehabiliation Council of India, New Delhi. ISBN: 81-7391-868-6
4. Coleman J.C. Abnormal Psychology and Modern Life, Taraporevala Sons & Co.
5. Gregory, R.J. (2000). Neuropsychological and geriatric assessment in Psychological Testing: History, Principles, and Applications (3rd ed.). New York: Allyn & Bacon.
6. Hurlock, E.B. (1981). Child development. (VI Ed.). Mc Graw Hill International Book Co.
7. Kline, P. (1993). The Handbook of Psychological Testing. Routledge
8. Lezak, M., Loring, D.W., and Hannay, H.J. (2004). Neuropsychological Assessment. Fourth Edition. New York: Oxford University Press
9. Siegal M.G. (Ed). (1987). Psychological Testing from Early Childhood Through Adolescence. International Universities Press

Course Outcomes: On the successful completion of the course, students will be able to

1. Acquire the knowledge on the scope, history and role of psychology in speech and hearing

2. Understand the assessment procedures (DSM, ICD), different types of psychological testings and current classificatory system.
3. Gain Knowledge about psychology in cognitive, emotional and social development.
4. Obtain Therapeutic techniques based on learning and behavior
5. To know about Neuro psychological assessments and its managements

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	H		L	L	L	L	L	M				H	M	M
CO2	H	M	H	M	M	H	M	H	M		M	H	H	M
CO3	H		H		H	H		H	L	M	L	H	H	L
CO4	H	L	H	H	H	H	M	H	L			H	H	M
CO5	M	M	H	H	H	H	H	H	L			H	H	M

Linguistics and Phonetics

Semester I **Hours of Instruction/week: 4**

22BASC04 **No. of Credits: 3**

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

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

Unit I Linguistics **12**

- Introduction to linguistics and different branches of linguistics: applied linguistics, sociolinguistics, psycholinguistics, metalinguistics, neurolinguistics and clinical linguistics
- Language characteristics and functions, difference between animal communication systems and human language
- Morphology – concepts of morph, allomorph, morpheme, bound free and compound forms, roots etc.
- Processes of word formation, content and function words
- Endocentric and exocentric constructions, form classes, grammatical categories
- Inflection and derivation, paradigmatic and syntagmatic relationship
- Principles and practices of morphemic analysis
- Langue versus parole
  Competence vs. performance

Unit II Phonetics and Phonology **12**

- Introduction to phonetics
- Articulatory, acoustic, auditory and experimental phonetics – an introduction
- Articulatory classification of sounds – segmental and supra-segmental
- Classification description and recognition of vowels and consonants
- Pathological aspects of speech sound production Transcription systems with special emphasis on IPA.
- Transcription of samples of normal and disordered speech
- Introduction to phonology, classification of speech sounds on the basis of distinctive features and phonotactics
- Application of distinctive feature theory to speech pathology and speech therapy, phonotactics, phonotactic patterns of English and Indian languages
- Phonemic analysis – Principles and practices; their practical implications for speech pathologists

- Common phonological processes - assimilation, dissimilation, metathesis, haplology, epenthesis, spoonerism, vowel harmony, nasalization, neutralization

Unit III Morphology, syntax, semantics and applied linguistics 12

- Morphology – concepts of morph, allomorph, morpheme, roots, compound forms - endocentric and exocentric constructions, free and bound morphemes, inflection and derivation, principles and practices of morphemic analysis
- Syntax – different methods of syntactic analysis IC analysis, phrase structure, grammar, transformational generative grammar Introduction to the major types of transformations
- Sentence types, notions about competence versus performance
- Deep structure versus surface structure
- Acceptability versus grammaticality language versus parole etc.
- A brief introduction to semantics – semantic feature theory, pragmatics
- Processes of word formation, content and function words, form classes, grammatical categories
- Syntax – concepts of phrases and clauses, sentence and its types
- Different methods of syntactic analysis – Immediate constituent analysis, Phrase structure, grammar, transformational generative grammar– deep structure versus surface structure, acceptability versus grammaticality; Introduction to the major types of transformations
- Usefulness of morphemic and syntactic analysis in planning speech and language therapy
- A brief introduction to semantics, semantic relations, semantic feature theory
- A brief introduction to pragmatics and discourse.

Unit IV Language Acquisition 12

- Issues in first language acquisition
- Pre-linguistic stages, linguistic stages
- Acquisition of phonology, morphology, syntax, semantics, and pragmatics
- Language and cognition
- A brief introduction to theories and models of language acquisition
- Biological maturation theory, linguistic theory, behavioral theory, information processing theory, social interaction theory
- An integrated approach to theories communicative competence and its development
- Applied linguistics with special reference to communication disorders
- Usefulness of morphemic and syntactic analysis in planning speech and language therapy

Unit V Bi/multilingualism 12

- Introduction to the language families of the world and India
- Issues related to second language acquisition & factors influencing it
- Inter-language theory, language transfer and linguistic interference

- Differences between first and second language acquisition/learning
- Bilingualism/Multilingualism
- Meta phonology
- Writing systems – types of writing
- History of writing systems
  Indian writing systems

Total Hours 60

Recommended Books:

1. Ball & Martin (1995). Phonetics for speech pathology. Delhi: AITBS Publishes, India.
2. Ball, Rahilly & Tench (1996). The phonetic transcription of disorderedspeech. San
3. Diego: Singular Publishing Group Inc.
4. Clark and Yallop (1999). An introduction to phonetics and phonology. Oxford: Blackwell Publishes Inc.
5. Karanth, P (2003). Cross-Linguistic study of Acquired Reading Disorders. Sage Publications, New Delhi. ISBN : 0-306-48319-X
6. Ladefoged, P. (1982). A course in phonetics. New York: Harcourt Brace Jovanorich Inc.
7. Shriberg & Kent (1982). Clinical phonetics. New York: John Wiley & Sons.

Course Outcomes: On the successful completion of the course, students will be able to

1. Understand the basic concepts of linguistics and its branches
2. Study about the components of language and its segments
3. Know about Transcription in of normal and abnormal speech in IPA
4. Knowledge about Language acquisition and theories based on it.
5. Acquire knowledge about Language families around the world and the factors affecting language

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	H	M	L	L			M	M	L		L	M	L	
CO2	H	M	M	L	L	M	M	M				H	M	
CO3	M	M	M	M		L	L	M	H		M	H	H	M
CO4	M	M	L	M	M	M	L	M	M		M	H	M	M
CO5	H	M	M		M	M		M	M		M	H	M	M

Electronics and Acoustics

Semester I **Hours of Instruction/week: 4**

22BASC05 **No. of Credits: 3**

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

- To understand the concept and types of power supply for biomedical instruments
- Basic aspects of digital signal processing theoretical basis of acoustics required for audiologists
- Functioning of computers and computing systems

Unit I Electronic components and power supply 12

- Resistors, capacitors, inductors
- Transformers and potentiometers
- Semiconductor diodes and transistors
- Light emitting devices, seven segment displays, Liquid crystal displays
- Principles of operations and working of Field Effect Transistors, Uni-junction transistors and thyristors
- Introduction to linear and digital integrated circuits
- Block diagram of a DC power supply
- Linear regulated power supplies, line regulation and load regulation, specifications of a DC power supply unit, Switched Mode Power Supply AC power supply, stabilizers, Uninterrupted Power Supply, and inverters Basic electronic concepts such as Polarity, Grounding

Unit II Introduction to Acoustics 12

- Calibrations and their characteristics
- Sound-generation and propagation
- Characteristics of sound
- Amplitude, Frequency and phase of pure tones
- Amplitude, Frequency and phase of complex tones (FFT and spectrum, relationship between time waveform, FFT and impulse response)
- Reflection and absorption, acoustic impedance, reverberation
- Impedance and admittance
- Electro-mechano-acoustic transformers

Unit III Acoustical treatment, transducers and basis of computers 12

- Introduction to audiometric rooms
- Absorption coefficient, Sabine's formula
- Materials for construction of audiometric rooms
- Lighting, grounding and other miscellaneous issues related to audiometric rooms
- Evaluation of efficiency of sound proofing in the audiometric rooms

- Amplifiers
- Microphones, loudspeakers - types and function
- Fundamentals of digital electronics, binary number system, Hex code, bit, byte, logic gates, counters, flip-flops etc.
- Introduction to computers
- Operating systems, hard ware, software, memory devices and other peripherals, care and preventive maintenance of computers

Unit IV Digital signal processing **12**

- Digital signal processing –introduction and need
- Analog to digital converters, sampling and quantization
- Fundamentals of digital filtering
- Infinite impulse response and finite impulse response filters
- Time domain methods of speech processing
- Frequency domain methods of speech processing
- Linear predictive analysis of speech signals
- Digital coding of speech signals
- Automatic speech recognition
- Speech synthesis

Unit V Instrumentation in speech and hearing **12**

- Introduction to electronic instrumentation in speech and hearing
- Electrodes, filters and preamplifiers
- Principle of operations, block diagram, calibration, maintenance and troubleshooting of audiometers, immittance meters, oto-acoustic emissions, hearing aids, evoked potential system, speech and voice analyses systems, artificial larynx, electroglottograph

Total Hours **60**

Recommended Books:

1. Haughton, P., & Haughton, P. M. (2002). Acoustics for Audiologists (1st edition.). San Diego, Calif: Emerald Group Publishing Limited.
2. Moser, P. (2015). Electronics and Instrumentation for Audiologists. Psychology Press.
3. Moser, P. J. (2013). Electronics and Instrumentation for Audiologists. Psychology
4. Press. Rout, N and Rajendran, S. (2014). Hearing aid trouble shooting and Maintenance, Published by National Institute for Empowerment of Persons with Multiple Disabilities, Chennai. Freely downloadable from http://niepmd.tn.nic.in/publication.php. ISBN 978-81-928032-1-0.
5. Speaks, C. E. (1999). Introduction To Sound: Acoustics for the Hearing and Speech Sciences (3 edition.). San Diego: Cengage Learning.
6. Villchur, E. (1999). Acoustics for Audiologists (1 edition.). San Diego, Calif: Delmar Cengage Learning.

Course Outcomes: On the successful completion of the course, students will be able to

1. Understand electronic components and power supplies
2. To know about sound generation, propagation, reflection, absorption and reverberation.
3. To acquire knowledge about construction of audiometric rooms and basis of computers
4. To understand difference in Analog to digital and digital to analog and digital signal processing.
5. To gain knowledge about Handling instruments in speech and hearing

CO/ PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		L		L							M		
CO2	M		L	L	M					M			M	M
CO3	M		H				M	M		M		M	H	
CO4	M	L										L	L	M
CO5	H		H	H	M	M	M	M		M		M	M	M

Research Methods and Statistics

Semester I **Hours of Instruction/week: 3**

22BASC06 **No. of Credits: 3**

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

- To understand the basic concept of research in the field of audiology and speech-language pathology.
- To design and execution of research ethical guidelines for conducting research.

Part A-Research Methods

Unit I Introduction to research methods **9**

- Meaning and purpose of research: meaning
- Need for research in audiology and speech-language pathology
- Funds/grants for research
- Steps in research: identification, selection
- Formulation of research questions: aims, objectives, statement of problem, hypothesis
- Types of variables; types of sampling procedures (random and non-random)
- Types/ methods of data collection and their advantages and disadvantages Reliability and validity (internal and external validity)

Unit II Research design in audiology and speech-language pathology **9**

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

Part B: Statistics

Unit III Introduction to statistics and data collection **9**

- Application of statistics in the field of Audiology and speech-language pathology.
- Scales of measurement: nominal, ordinal, interval, ratio
- Classification of data: class intervals, continuous and discrete measurement
- Normal distribution: general properties of normal distribution, theory of probability, area under normal probability curve
- Variants from the normal distribution: skewness and kurtosis
- Measure of central tendency: mean, median, mode

- Measures of variability: range, deviation (average and standard deviation),variance

Unit IV Statistics and research designs 9

- Choosing statistics for different research designs
- Correlational techniques: Pearson's Product Moment Correlation Coefficient;
- Spearman's Rank order correlation coefficient
- Statistical inference: concept of standard error and its use; the significance of statistical measures; testing the significance of difference between two means z-test, t-test; analysis of variance, post hoc tests,
- Non-parametric tests: Chi-square test, Wilcoxon test, Mann-Whitney U test,
- Reliability and validity of test scores: reliability and validity, Item analysis
- Analysis of qualitative data
- Software for statistical analysis

Unit V Epidemiology 9

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

Total Hours 45

Recommended Books:

1. Dane F. C. (2011). Sampling and Measurement. In Evaluating research: Methodology for people who need to read research. New Delhi: SAGE publication.
2. Field, A. (n.d.). Discovering Statistics Using IBM SPSS (4th ed.). SAGE Publications.
3. Hegde M. N. (2010). A course book on Scientific and professional writing for speech language pathology (4thEdition), Singapore: Delmar publication.
4. Hegde, M. N. (2003). Clinical research in communicative disorders: Principles and strategies. (3rd Edition), Austin: Pro-ed
5. Hesse-Biber, S. N. & Leavy, P. (2011). The Ethics of social research. In The Practice of qualitative research. (2nd Edition), New Delhi: SAGE publication.
6. Jekel, F. J., Katz, L.D., & Elmore, G.J (2001). Basic Epidemiologic Concepts and Principles in epidemiology, Biostatistics, and Preventive Medicine (2nd Edition).Pennsylvian: Saunders
7. Meline, T. (2010). A research primer for communication sciences and disorders. Singapore: Pearson publication.

Course Outcomes: On the successful completion of the course, students will be able to

1. Understand the steps in research.
2. Acquire knowledge about types of research and research designs in Audiology and Speech Language pathology
3. To know about Statistics- its introduction and application in the field of audiology and speech language pathology
4. Acquire knowledge about Types of statistical measures and choosing a correct statistics method for the research design
5. To obtain knowledge about Introduction to epidemiology, concepts, methods and incidence and prevalence of disorders in speech and hearing.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	H		H	L		L		M			H	H	M	
CO2	H	L	H			H	M		L	M	M		H	
CO3	H		M			H	L			M	H		H	
CO4	H	L	H		M	H		M			H	M	L	
CO5	H		M	H		H	M	M			H	H	M	

Clinical Observation (Speech-Language Pathology)

Semester I
22BASC07

Hours of Instruction/week: 3
No of Credits: 2

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

- To record, observe and analyze normal aspects of language, speech, voice and fluency variations from typical individuals of different age groups
- To understand speech language stimulation techniques and other therapy techniques of various disorders

Observation:

- Observe normal aspects of speech and language, and analyze perceptually variations in voice, articulation and fluency in different recorded speech samples of typical individuals at different age groups (children, adults and older adults) and sex.
- Observe stress, rhythm and intonation and variations in rate of speech and analyze perceptually variations in prosody in different recorded samples of typical individuals at different age groups (children, adults and older adults) and sex.
- Observe Oral mechanism examination on 5 normal children and 5 normal adults.
- Prepare a diagnostic and therapy kit.
- Observe speech language stimulation techniques and other therapy techniques for various speech disorders.
- Prepare a report on the available clinical facilities and clinical activities of the institute.

Total hours: 45

Course Outcomes: On the successful completion of the course, students will be able to

1. Analyze the normal aspects of language, speech, voice and fluency variations from typical individuals of different age groups
2. Understand speech language stimulation techniques and other therapy techniques of various disorders
3. To prepare diagnostic and therapy kit
4. To perform oral mechanism examination for children and adults
5. To prepare report on available clinical facilities and activities of the institute.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	H	L	H	H	H	H	H	M	H		L	H		
CO2	H	L	H	H	H	H	H	M	H		L	H		
CO3	H	L	H	H	H	H	H	M	H		L	H		
CO4	H	L	H	H	H	H	H	M	H		L	H		
CO5	H	M	H	H	H	H	H	M	H		L	H		

Clinical Observation (Audiology)

Semester I **Hours of Instruction/week: 3**
22BASC08 **No of Credits: 2**

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

- To understand case history, tuning fork test, pure tone audiometry and speech audiometry of adults and children with normal and disabled individuals
- To understand and perform otoscopic examination

Observation:

- Observe the case history on 5 adults with hearing problem and correlate the information from case history to results of pure tone audiometry.
- Observe the case history on 5 children with hearing problem and correlate the information from case history to results of pure tone audiometry.
- Observe different tuning fork tests on 5 simulated conductive hearing loss individuals.
- Observe different tuning fork tests on 5 simulated sensori neural hearing loss individuals.
- Observe pure tone Audiometry on 10 normal hearing individuals.
- Observe speech Audiometry on 10 normal hearing individuals.
- Observe daily listening checks and subjective calibrations 20 times and observe objective calibration once
- Perform otoscopy and draw the tympanic membrane of10 healthy normal individuals

Total hours 45

Course Outcomes: On the successful completion of the course, students will be able to

1. To understand case history for adults and children with normal and disabled individuals
2. To perform tuning for test
3. To understand pure tone audiometry and speech audiometry for adults and children with normal and disabled individuals
4. To understand and perform daily listening checks
5. To understand and perform otoscopic examinations.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Discipline Specific Elective (DSE -I) Course
Digital Health

Semester I
22BASD01
Objectives:

Hours of Instruction/week:2+3
No. of Credits: 2

- To know about the basics of Digital Health.
- To know about AI use in the healthcare systems.
- To know about3D products in healthcare system.

Unit 1: Digital Health

15

Introduction of Digital Health – Vision - Benefits of Digital Health – Digital Health Initiatives – National Digital Health Mission – Ecosystem – Architecture – Applications of Digital Health -Learning Health System –Characteristics of Learning Health Care System

Unit 2: Digital Health Care Products

15

Categories of Digital Health Products and Services - Wearable Fitness Tracker –– Smart health watches – Wearable ECG Monitors – Wearable Blood Pressure Monitor – Wearable Biosensor –mHealth –Telehealth – Telemedicine -Difference between mHealth vs telehealth -Difference between Telehealth vs Telemedicine

Unit 3: ML and DL in Healthcare

15

About machine Learning – Benefits of ML in Healthcare – Cognitive Computing – Trend of ML in Medical Health – Applications of ML in Pharma and Medicine – Applications of ML in Healthcare –Big Data – Benefits of Big Data in Healthcare – Features of Big Data in Healthcare – Methods for analysing Big Data in Healthcare - Applications of Big Data in Healthcare -Introduction on Deep Learning –Deep Learning Algorithms– Deep Learning in Clinical Image Analysis.

Unit 4: Artificial Intelligence in Healthcare

15

AI-assisted Robotic surgery – Virtual nursing assistant – Aid Clinical judgment or diagnosis – Administrative task – Image Analysis–Develop Medicines – Analyses Unstructured Data –Forecast Kidney Disease – Contributes to Cancer Research and Treatment – Supports Health Equity – AI in Neuroscience – AI in Thoracic Surgery – AI in Cardiac Management.

Unit 5: Robotics &3D Printing in Healthcare

15

Role of Robots in Healthcare – Benefits of robots in Healthcare - Types of Robots in Healthcare – Surgical Robots –Exoskeletons – Care Robots – Hospital Robots –3D Printing for Healthcare – Preoperative planning – Customized Surgery – Designing medical devices

– Improving surgical instruments – Creating Protheses – 3D Printed implants – 3D Digital Dentistry – Streamlining drug administration

Total Hours 75

Reference Books:

1. Dac-Nhuong Le, Chung Van Le, Jolanda G. Tromp, GiaNhu Nguyen, (2018). "Emerging Technologies for Health and Medicine - Virtual Reality, Augmented Reality, Artificial Intelligence, Internet of Things, Robotics, Industry 4.0", ISBN 978-1-119-50981-3
2. Thomas-Vazquez, Daniel & Singh, Deepti&Hatamleh, Muhanad&Tripathi, Anuj&Vishnoi, Tanushree& Bhat, Sumrita& Thompson, Andrew & Jason, Jeremy & Kim, Keekyoung&Gleadall, Andy & Ruiz, Laura. (2019). "3D Printing in Medicine and Surgery", Woodhead Publishing Series in Medicine, ISBN 978-0-85709-233-5.

Website links:

1. https://www.ncbi.nlm.nih.gov/books/NBK470260/
2. https://www.insiderintelligence.com/insights/wearable-technology-healthcare-medical-devices/
3. https://www.singlecare.com/blog/telehealth-vs-telemedicine/
4. https://www.mobihealthnews.com/news/contributed-top-10-use-cases-ai-healthcare
5. https://www.researchgate.net/publication/330724271_Big_Data_in_Health_Care_Applications_and_Challenges
6. https://www.mobihealthnews.com/news/contributed-top-8-healthcare-uses-3d-printing
7. https://amfg.ai/2019/08/30/3d-printing-in-healthcare-where-are-we-in-2019/

Course Outcome: On the successful completion of the course, students will be able to

1. Get familiar with Digital Health.
2. Understand the working nature of the Wearable Devices used in Digital Health.
3. Knowledge on Machine Learning techniques used in healthcare system.
4. Knowledge on AI embedded Healthcare system.
5. Get familiar with 3D Model Products and Robots in healthcare systems.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M	M	H		H	H		M				M	H	
CO2	M	M	H		H	H		M				H	H	
CO3	M	H	H	H	H	H	M	M		M		M	H	
CO4	M	H	H	H	H	H	M	M		M		M	H	
CO5	M	M	H	H	H	H		M		M		M	H	

Neurology

Semester II **Hours of Instruction/week: 4**

22BASC09 **No of Credits: 3**

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

- Basic concepts, anatomy and physiology of nervous system related to speech and hearing and neural organization –different structures and functions of various systems
- Neurosensory and neuromotor controls in speech, language and hearing mechanisms
- Basic principles and assessment procedures and management procedures used in speech, language and hearing

Unit I Anatomy and physiology of the nervous system **12**

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

Unit II Neural organization of speech and hearing processes **12**

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

Unit III Neural disorders associated with speech and hearing disorders - I **12**

- Neural infections – meningitis, encephalitis
- Developmental anomalies – spinal cord defects, syringomalacia and bulbia, Arnold chian malformations

- Hydrocephalus – source and circulation of CSF, types and etiopathogenesis
- UMN lesions –spastic dysarthria
- LMN lesions –flaccid dysarthria
- Mixed lesions
- Extra pyramidal lesions – dyskinetic dysarthria
- Cerebellum and cerebellar pathway lesions – ataxic dysarthria
- Other diverse lesions and dysarthrias

Unit IV Neural disorders associated with speech and hearing disorders - II **12**

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

Unit V Speech-language and swallowing disorders **12**

- Central language mechanism and its disorders
- Developmental motor speech disorders – cerebral palsy, muscular dystrophy
- Neurologic disorders with primitive reflexes, diagnosis and management
- Clinical neurological syndromes associated with speech and language disorders
- Childhood language disorders associated with neurologic disorders
- Swallowing associated with neurogenic disorders and assessing mastication and deglutition
- Agnosia and other conditions associated with speech and hearing disorders
- Cognitive disorders associated with neurologic disorders
- General management principles and options for childhood neurogenic speech, language and hearing disorders
- General management principles and options for adult neurogenic speech, language and hearing disorders

Total Hours 60

Recommended Books:

1. Adams, R.D. &Sidman, R.L. (1968). Introduction to neuropathology. New Jersey: McGraw-Hill.
2. Bhatnagar, S.C. (2012). Neuroscience for the Study of Communicative Disorders. Lippincott, Williams & Wilkins
3. Garden, E. (1968). Fundamental of neurology, V Edn., Philadelphia: Sarenders Co.
4. Webb, W. G., & Adler, R. K. (2008). Neurology for the speech-language pathologist (5th Ed.). St. Louis, Mo: Mosby/Elsevier.
5. Duffy, J. R. (2013). Motor Speech Disorders: Substrates, Differential Diagnosis, and Management (3rd Ed.). University of Michigan, Elsevier Mosby.

Course Outcomes: On the successful completion of the course, students will be able to

1. Understand the basics of neuro anatomy and physiology, cranial nerves and blood supply
2. Know about Neuro sensory and neuro motor controls of speech and hearing
3. To acquire knowledge about neural disorders like infections, developmental anomalies, UMN, LMN lesions related to speech and hearing.
4. To know about cerebro vascular lesions, trauma, degenerative diseases, and metabolic disorders related to neural conditions.
5. To obtain knowledge about central language acquisition, swallowing related neurogenic disorders.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M	L	H	L	L	L	M	H		M	M	H	H	L
CO2	H		M	L	L	L	L	H	L	L	M	H	H	
CO3	H	M	M	M	M		M	H		L	L	H	H	L
CO4	H	M	M	M		L		H			L	H	M	
CO5	M	M	M	M	L	L	L	M	M	H	M	M	L	

Speech-Language Pathology

Semester II

22BASC10 **Hours of Instruction/week: 4**

No of Credits: 3

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

- The different speech and language disorders and basic concepts and tools required for diagnosing speech and language disorders
- basics of assessment procedures and intervention procedures for speech and language disorders
- identification and prevention, counseling for speech and language disorders

Unit I Basic concepts and methods of diagnostics **12**

- Introduction to Speech Language Disorders
- Definition and descriptions of delay, deviancy and disorders; impairment, disability and handicap
- Incidence and prevalence of speech and language disorders
- Causes of speech and language disorders
- Basic principles in assessment, evaluation and appraisal
- Tools for diagnosis- case history, interview, self-reports, questionnaire &observations
- Diagnostic models – SLPM, Wepman, Bloom and Lahey
- Types of diagnoses – Clinical diagnosis, direct diagnosis, differential diagnosis, diagnosis by treatment, diagnosis by exclusion, team diagnosis, instrumental diagnosis, provocative diagnosis, tentative diagnosis advantage/disadvantages
- Characteristics of a diagnostic clinician, Organization and basic requirements for clinical set up and team approach, DSM, ICD classification and ICF

Unit II: Basic concepts and methods of therapeutics **12**

- Basic concepts and terminologies in speech therapeutics
- General principles of speech and language therapy
- Speech therapy set-up
- Individual and group therapy
- Procedures and types of for speech-language therapy
- Approaches to speech and language therapy – formal, informal and eclectic approaches
- Planning for speech and language therapy – goals, steps, procedures and activities
- Importance of reinforcement principles and strategies in speech and language therapy, types and schedules of rewards and punishment
- Individual and group therapy
- AAC and other nonverbal methods of therapy

Unit III Overview of basic assessment and management of speech disorders 12

- Causes of speech disorders
- Overview of assessment procedures for voice disorders; articulation and phonological disorders; and fluency disorders
- Overview of management procedures for voice disorders; articulation and phonological disorders; and fluency disorders
- Early identification and prevention of speech disorders
- Basic concepts in assessment and management of swallowing disorders

Unit IV Overview of basic assessment and management of language disorders 12

- Types, characteristics and classification of language disorders
- Causes of language disorders
- Overview of assessment procedures for child language disorders; adult language disorders; and neurogenic language disorders
- Overview of management procedures for child language disorders; adult language disorders; and neurogenic language disorders
- Early identification and prevention of language disorders
- Issues related to bi- /multilingualism

Unit V Other issues in practice as a speech - language pathologist 12

- Professional code of conduct – social, cultural and other ethical issues
- Scope of practice –different set ups and prerequisites
- Documentation of diagnostic, therapeutic and referral reports
- Counselling, guidance, facilitation of parent participation and transfer of skills
- Evaluation of therapy outcome and follow up
- Evidence based practice
- Community based rehabilitation
- Role of itinerant speech therapist, Anganwadis, resource teachers etc.
- PWD act, National Trust, Consumer protection Act, noise pollution Act and other public laws, RCI, ISHA and other organizations controlling the field
- Facilities and concessions available for speech and hearing disabled

Total Hours 60

Recommended Books:

1. Owens. Jr, Kimberly, A. Metz, F.E. (2014). 5th Ed. Introduction to Communication Disorders: A life span based Perspective. Pearson Communication Science and Disorders Series.
2. Hegde, M. N., & Davis, D. (2005). Clinical methods and practicum in speech language pathology (4th Ed.). Australia; Clifton Park, NY: Thomson Delmar Learning.
3. Shipley, K. G., & Roseberry-McKibbin, C. (2006). Interviewing and counselling in communicative disorders: Principles and procedures (3rd ed.). Austin, Tex: Pro-Ed.

4. Brookshire, R. H. (2003). Introduction to neurogenic communication disorders (6th ed.). St. Louis, Mo: Mosby.
5. Hulit, L.M., Marle. R., Kathleen, R. H., & Fowey (2010). Born to Talk. Pearson Communication Science and Disorders Series 5th Ed.
6. Roth, F. P., & Worthington, C. K. (2005). Treatment resource manual for speech language pathology (3rd ed.). Australia; Clifton Park, NY: Thomson Delmar Learning.
7. Shipley, K. G., & McAfee, J. G. (2004). Assessment in speech-language pathology: A resource manual (3rd ed.). Australia; Clifton Park, NY: Delmar Learning.
8. Ysseldyke, J. E., & Algozzine, R. (2006). Teaching students with communication disorders: A practical guide for every teacher. Thousand Oaks,Calif.: Corwin Press.

Course outcomes: On the successful completion of the course, students will be able to

1. Acquire knowledge about the speech and language disorders and its causes,its tools to diagnosis.
2. To know about the principles of therapy and the procedures and types of therapyfor speech and language disorders
3. To know about the cause, assessment and management of the voice, fluencyand articulation disorders
4. To know about the cause, assessment and management of the child language, adult language and neurogenic language disorders
5. Gain knowledge about the professional ethics, scope of speech language pathologist

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	H	H	H	H	H	M	M	M		H	M	M	H	H
CO2	H	H	H	H	H	M	M	M		H	M	M	H	H
CO3	H	H	H	H	H	M	M	M		H	M	M	H	H
CO4	H	H	H	H	H	M	M	M		H	M	M	H	H
CO5	H	H	H	H	H	M	M	M		H	M	M	H	H

Audiology

Semester II **Hours of Instruction/week: 4**

22BASC11 **No of Credits: 3**

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

- Take case history, administer the tuning fork tests and interpret the results
- Administer pure tone and speech audiometry including masking on clinical population and
- Carryout subjective calibration and daily listening checks of the audiometer and get adequate theoretical information necessary to understand concepts involved in objective calibration

Unit I Differential sensitivity **12**

- Concept of differential sensitivity, just noticeable difference
- Weber's fraction
- Intensity discrimination
- Frequency discrimination
- Duration discrimination and temporal resolution
- Applications of jnd's
- Magnitude estimation and production
- Loudness – equal loudness level contours and its application
- Loudness scales - sone, phone, Steven's power law
- Pitch- scales of pitch

Unit II: Case history and tuning fork tests **12**

- Need for case history
- Basics of history taking
- Essential factors to be included in case history for adults
- Essential factors to be included in case history for children
- Interpretation of case history
- Audiological evaluation – rationale and purpose
- Principles, procedure, interpretation, advantages and disadvantages of Rinne and
- Schwabach tuning fork test
- Principles, procedure, interpretation, advantages and disadvantages of Weber and
- Bing tuning fork test
- Audiometric version of Weber and Bing test

Unit III Pure tone audiometry **12**

- Classification of audiometers, Parts of an audiometer, characteristics specifications of transducers used (earphones, bone vibrators, loud speakers)
- Audiogram- concept and symbols used

- Clinical method of threshold estimation
- Factors affecting air conduction threshold
- Bone conduction thresholds- measurements, factors effecting
- Permissible noise levels in the audiometric room

Unit IV Speech audiometry **12**

- Importance and purpose
- Different types of stimuli used in speech audiometry
- Concept of phonetically and phonemically balanced
- Speech detection thresholds – procedure and application
- Speech reception thresholds – procedures and application
- Word recognition scores –procedure and applications
- PIPB function – procedure and applications
- Factors affecting speech audiometry
- BC speech audiometry – procedure and its application
- Test materials available in various languages

Unit V Clinical masking and instrumental calibration **12**

- Definition and different terminologies
- Purpose and rationale of clinical masking
- Different types of stimulus employed in clinical masking
- Interaural attenuation and factors affecting interaural attenuation
- When to mask and how much to mask – importance of adequate noise levels
- Different procedures for masking
- Masking for speech audiometry
- Calibration definition and purpose
- Daily listening checks and subjective calibration
- Objective calibration of air conduction transducers
- Objective calibration of bone conduction transducers
- Frequency calibration

Total Hours 60

Recommended Books:

1. Durrant, J. D., &Feth, L. L. (2012). Hearing Sciences: A Foundational Approach (1edition.). Boston: Pearson.
2. Emanuel, D. C., & Letowski, T. (2008). Hearing Science (1 edition.). Philadelphia: Lippincott Williams and Wilkins.
3. Gelfand, S. A. (2009). Hearing: An Introduction to Psychological and Physiological Acoustics (5 edition.). London: CRC Press.
4. Kaplan, H., Gladstone, V. S., & Lloyd, L. L. (1993). Audiometric Interpretation: A Manual of Basic Audiometry (2 edition.). Boston: Pearson.
5. Katz, J. (2014). Handbook of Clinical Audiology (7th International edition edition.).Lippincott Williams and Wilkins.
6. Martin, F. N., & Clark, J. G. (2014). Introduction to Audiology. Boston: Pearson.

7. Silman, S., & Silverman, C. A. (1997). Auditory Diagnosis: Principles and Applications (Reissue edition.). San Diego: Singular Publishing Group

Course outcomes: On the successful completion of the course, students will be able to

1. To understand the basic concepts of differential sensitivity, discriminations in intensity and speech
2. To obtain knowledge about the need, essential factors to be included in the case history and tuning fork test procedures and interpretations in Rinne, Weber, Bing, Schwabach
3. To know about the audiometer, its parts, characteristics, procedures and factors affecting the threshold estimation
4. To know about the purpose and importance of the speech audiometer, its procedures, applications and factors affecting speech audiometry
5. Acquire knowledge about the purpose, rationale, type, procedure for masking. And also about the subjective and objective calibration, its purpose.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	H	M	H	M	L	M	H	M		L	M	M	H	H
CO2	H	M	H	M	L	M	H	M		L	M	M	H	H
CO3	H	M	H	M	M	M	H	M		L	M	M	H	H
CO4	H	M	H	M	M	M	H	M		L	M	M	H	H
CO5	H	M	H	M	M	M	H	M		L	M	M	H	H

Practicals-I (Speech-Language Pathology)

Semester II
22BASC12

Hours of Instruction/week: 8
No of Credits: 4

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

1. To demonstrate normal aspect of speech, language, voice, fluency variations of typical individuals of different age groups
2. To understand transcription using IPA
3. To administer standardized test for assessment

PRACTICAL

- Demonstrate normal aspects of speech and analyze perceptually variations in voice, articulation and fluency in different recorded speech samples of typical individuals at different age groups (children, adults and older adults) and sex.
- Demonstrate normal aspects of language and analyze perceptually variations in language in different recorded samples of typical individuals at different age groups (children, adults and older adults) and sex.
- Demonstrate stress, rhythm and intonation and variations in rate of speech and analyze perceptually variations in prosody in different recorded samples of typical individuals at different age groups (children, adults and older adults) and sex.
- Use IPA to transcribe spoken words. Record a standard passage, count number of syllables and words, identify syllable structure, syntactic structures in the passage.
- Oral mechanism examination on 5 normal children and 5 normal adults. Prepare a chart and show the developmental stages of speech and language behavior.
- Administer standardized tests for assessment of delayed speech and language development such as REEL, SECS, LAT, 3DLAT, ALD each on any 2 children.
- Study the available normative data (Indian/Western) of speech such as respiratory, phonatory, resonatory and articulatory parameters.
- Measure the following in 5 normal subjects: (a) Habitual frequency (b) Frequency range (c) Intensity (d) Intensity range (e) Phonation duration (f) rate of speech (g) Alternate Motion Rates and Sequential Motion Rates (h) s/z ratio.
- Study the available normative data (Indian/Western) of language such as phonology, semantics, syntax, morphology and pragmatic measures.
- Perceptual analysis of speech and language parameters in normal (2 children and 2 adults and persons with speech disorders (3 adults + 3 children).
- Prepare a model diagnostic report of a patient with speech and language disorder.
- Prepare a diagnostic and therapy kit.
- Make a list of speech language stimulation techniques and other therapy techniques for various speech disorders.
- Familiarize with the sources for referral and parent counseling procedures.
- Prepare a report on the available audiovisual material and printed material/pamphlets relating to speech-language pathology, public education of communication and hearing disorders, etc.
- Prepare a report on the available clinical facilities and clinical activities of the institute.

Clinical Practicum

- Observe the evaluation process and counseling of at least 5 different speech and language disorders in children.
- Observe the evaluation process and counseling of at least 5 different speech andlanguage disorders in adults.
- Take case history of a minimum of 10 individuals (5 normal & 5 clients with complaints of speech-language problems). Observation of diagnostic procedures
- Observe various therapeutic methods carried out with children and adults with speech and language disorders.

Total hours-120 hours

Course Outcomes: On the successful completion of the course, students will be able to

1. To understand and demonstrate normal aspect of speech, language, voice, fluency variations of typical individuals of different age groups
2. To understand and use IPA for transcription of spoken words
3. To administer standard test for assessment
4. To study available normative data
5. To prepare report for diagnosing.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	H	L	H	H	H	H	H	M	H		L	H	M	
CO2	H	L	H	H	H	H	H	M	H		L	H	M	
CO3	H	L	H	H	H	H	H	M	H		L	H	M	
CO4	H	L	H	H	H	H	H	M	H		L	H	M	
CO5	H	M	H	H	H	H	H	M	H		L	H	M	

Practicals-I (Audiology)

Semester II
22BASC13

Hours of Instruction/week:9
No of Credits: 4

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

1. Understand and carryout PTA for normal hearing individuals
2. Understand and carryout Speech audiometry for normal hearing individuals
3. Understand clinical masking and plotting of audiograms

PRACTICAL

Calculate/derive the answers for following

- Calculate the relative intensities with different reference intensities.
- Calculate decibels when sound intensities are doubled, increased by 4 times
- Add decibels when two sounds with different intensities are produced simultaneously
- Collect pictures of audiometers that existed between 1920 and 1990.

Perform the following experiments

- Calculate reference equivalent sound pressure levels (RETSPL) for head phones and bone vibrator for any two frequencies using 30 participants.
- Measure most comfortable level on 10 participants with normal hearing sensitivity.
- Measure uncomfortable levels on 10 participants with normal hearing sensitivity.
- Calculate the sensation levels of MCL and UCLs in above 10 participants.
- Measure difference limen of intensity, frequency and duration on 10 normal hearing adults and plot it in graphical form and interpret the results.
- Measure equal loudness level contours at minimum level, 40 dB SPL, 70 dB SPL (1 kHz) in 5 normal hearing adults.
- Measure sone and mel in 5 normal hearing adults using scaling techniques.
- Take case history on 5 adults and 5 children with hearing problem and correlate the information from case history to results of pure tone audiometry.
- Administer different tuning fork tests on 5 simulated conductive and 5 sensori neural hearing loss individuals.
- Carry out pure tone and speech audiometry on 10 normal hearing individuals.
- Carry out clinical masking on 10 normal hearing individuals with simulated conductive hearing loss and carry out clinical masking on 5 individuals with conductive hearing loss and 5 individuals with sensori-neural hearing loss.
- Carryout daily listening checks and subjective calibrations 20 times and observe objective calibration once Perform otoscopy and draw the tympanic membrane of 10 healthy normal individuals
- Measure difference limen of intensity, frequency and duration on 10 normal hearing adults and plot it in graphical form and interpret the results
- Measure equal loudness level contours at minimum level, 40 dB SPL, 70 dB SPL (1 kHz) in 5 normal hearing adults
- Measure sone and mel in 5 normal hearing adults using scaling techniques

Clinical Practicum

- Observe case history being taken on 5 adults and 5 children with hearing problem and correlate the information from case history toresults of pure tone audiometry.
- Administer different tuning fork tests on 5 conductive and 5 sensori neural hearing loss individuals.
- Observe the pure tone audiometry being carried out on 30 clients.
- Plot the audiogram, calculate the pure tone average and write the provisional diagnosis of observed clients.
- Perform otoscopy (under supervision) on at least 1 client with following conditions: Tympanic membrane perforation, SOM, CSOM

Total hours-135 hours

Course Outcomes: On the successful completion of the course, students will be able to

1. Understand, measure and calculate MCL and UCL
2. Measure difference limen of intensity, frequency and duration
3. Carryout PTA and speech Audiometry.
4. To carryout masking and plotting of audiograms
5. To measure Sone and Mel

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Discipline Specific Elective (DSE - II) Course
Otolaryngology

Semester II **Hours of Instruction/week: 2+2**

22BASD02 **No of Credits: 3**

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

- The causes, signs, symptoms, pathophysiology and management of diseases of external, middle and inner ear leading to hearing loss, and
- causes, signs, symptoms, pathophysiology and management of diseases of laryngeal
- causes, signs, symptoms, pathophysiology and management of diseases of articulatory systems

Unit I External and middle ear and their disorders 12

- Clinical anatomy of the ear
- Congenital anomalies
- Diseases of the external ear
- Tumors of the external ear
- Perforation and ruptures of tympanic membrane
- Eustachian tube dysfunction
- Otitis media with effusion
- Cholesteatoma and chronic supparative otitis media
- Otosclerosis
- Trauma to temporal bone
- Facial nerve and its disorder

Unit II Inner ear and its disorders 12

- Congenital anomalies
- Meniere's Disorder
- Ototoxicity
- Presbycusis
- Disorders of vestibular system
- Vestibular Schwannoma
- Tinnitus and medical line of treatment
- Pre-surgical medical and radiological evaluations for implantable hearing devices
- Overview of surgical technique for restoration and preservation of hearing
- Post-surgical care and complication of surgery for cochlear implants Overview of surgical technique, post-surgical care and complication of surgeries for implantable bone conducted hearing aids and middle ear implant

Unit III Oral cavity and its disorders 12

- Anatomy of the oral cavity
- Common disorders of the oral cavity
- Tumors of the oral cavity
- Cleft lip and palate -- medical aspects
- Clinical anatomy and physiology of pharynx

- Inflammatory conditions of the pharynx, tonsils and adenoids
- Tumors of the pharynx

Unit IV Larynx and its disorders **12**

- Clinical anatomy of larynx
- Difference between adult and infant larynx
- Clinical examination of larynx
- Stroboscopy - technique, procedure, interpretation and precautions
- Congenital laryngeal pathologies
- Inflammatory conditions of the larynx
- Vocal nodule and other disorders of the vocal folds
- Benign and malignant tumors of the larynx
- Laryngectomy – overview of surgical procedure
- Phono surgery and other voice restoration surgeries

Unit V Esophagus and its disorders **12**

- Clinical anatomy and physiology of esophagus
- Clinical examination of esophagus
- Congenital anomalies of esophagus
- Esophageal fistula
- Inflammatory conditions of esophagus
- Benign conditions of esophagus
- Malignant conditions of the esophagus
- Airway management procedure.

Total Hours 60

Recommended Books:

1. Chan, Y. and Goddard, J.C. (2015). K J Lee's Essential otolaryngology: head and neck surgery. (11th edition). New Delhi: Atlantic Publisher and Distributers
2. Dhingra, P. L. (2013). Diseases of Ear, Nose and Throat (Sixth edition). Elsevier.
3. O'Neill, J.P. and Shah, J.P. (2016). Self-assessment in otolaryngology. Amsterdam: Elsevier
4. Postic, W.P., Cotton, R.T., Handler, S.D. (1997). Ear trauma. Surgical Pediatric Otolaryngology. New York: Thieme Medical Publisher Inc.
5. Wackym, A. and Snow, J.B. (2015). Ballenger's oto rhino laryngology head and neck surgery. (18th edition). United States: McGraw-Hill Medical

Course outcomes: On the successful completion of the course, students will be able to

1. Acquire knowledge about the anatomy of the ear and diseases of the external ear and middle ear
2. To know about the inner ear and its disorders and the pre and post - surgical evaluations for implantable hearing devices.
3. To know about the oral cavity and its disorders.

4. To know the anatomy of larynx and disorders and the Laryngectomy surgical procedures
5. To acquire knowledge about the anatomy and physiology of the esophagus and its disorders.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	H	H	H	H	H	M	M	L		M	M	M	H	H
CO2	H	H	H	H	H	M	M	L		M	M	M	H	H
CO3	H	H	H	H	H	M	M	L		M	M	M	H	H
CO4	H	H	H	H	H	M	M	L		M	M	M	H	H
CO5	H	H	H	H	H	M	M	L		M	M	M	H	H

Voice and its Disorders

Semester III
22BASC14

Hours of Instruction/week: 4+1
No of Credits: 3

Objectives:

- To understand and describe characteristics of normal voice
- To identify voice disorders and explain etiology related to voice problems, and its pathophysiology
- To assess voice disorders and to provide counselling and therapy to individuals with voice disorders

Unit I: Basic concepts in voice and its production **12**

- Definition and functions of voice – biological and non-biological Parameters of voice
- Structures and function of respiratory system for the purpose of phonation
- Laryngeal anatomy – Structural support of larynx, muscles, vocal fold microstructure, blood supply, and innervations
- Vocal tract resonance and voice quality
- Development of voice: Birth to senescence; structural and voice related changes Aerodynamic myo-elastic theory of voice production
- Voice mechanics – Physiologic, acoustic and aerodynamic correlates of voice Pitch and loudness changing mechanism, voice registers and voice quality
- Description of normal and abnormal voice: Parametric, pathologic/perceptual, social

Unit II: Characteristics and pathophysiology of voice disorders **12**

- Pathologies of the laryngeal mechanism: classification of voice disorders, incidence, and prevalence
- Etiology of voice disorders: voice misuse and abuse, medical related etiologies, primary disorder etiologies and personality related etiologies
- Pathologies of vocal fold cover (infective and trauma related secondary conditions) and muscular dysfunction
- Non-organic voice disorders: functional disorders, psychosomatic- functional aphonia and physiological- voice abuse, Puberphonia)
- Congenital voice disorders Neurological voice disorders
- Voice problems in systemic illnesses and endocrine disorders Voice problems in transgenders
- Voice problems in the elderly, professional voice users: teachers and singer

Unit III: Assessment of Voice **12**

- Referral sources, medical examination and team approach
- Protocol for voice assessment: components and philosophies (ICF, ICD)
- Clinical voice laboratory: principles of instrumental measurements – electrical error, electrical safety, hygiene safety; recording of data; storage; patented soft wares, free wares
- Perceptual evaluation of voice: GRBAS, CAPE -V
- Visualization procedures- indirect laryngoscopy, video laryngoscopy &Stroboscopy Acoustic analysis of voice: F0 related measures, intensity related measures, quality related measures, phonetogram, DSI

- Electroglottography and inverse filtering procedures Aerodynamic analysis of voice: static & dynamic measures Self-evaluation of voice: PROM, VHI, V-DOP
- Reporting of voice findings, normative comparisons, differential diagnosis

Unit IV: Management of voice 12

- Voice therapy orientation: basic principles, goal setting and approaches Vocal hygiene and preventive counselling
- Symptomatic voice therapy – voice facilitation techniques
- Psychological approaches to voice therapy – psychoanalysis, rational emotive therapy and cognitive behavior therapy
- Physiological approach – breathing and postural techniques
- Holistic voice therapy approaches -1: accent therapy, confidential voice therapy, Holistic voice therapy approaches - 2: vocal function exercises, resonant voice therapy, Lee Silverman voice therapy
- Medical and surgical procedures in the treatment of benign vocal fold lesions: pharmaceutical effects on voice, phono surgery : re-innervation techniques, laryngeal framework surgeries, micro laryngeal excision
- Professional voice care

Unit V: Intervention strategies for voice disorders 12

- Vocal trauma related disorders
- Functional voice disorders – inappropriate vocal components Functional aphonia
- Puberphonia/mutational falsetto Muscle tension dysphonia Sulcus vocalis
- Vocal fold palsy Spasmodic dysphonia GERD/LPR
- Benign vocal fold lesions requiring surgical intervention Post-operative care for benign vocal fold lesions disorders Documenting voice therapy outcomes

Practicals 15

- Record phonation and speaking samples (counting numbers) from five children, adult men, adult women, geriatric men and geriatric women. Note recording parameters and differences in material.
- Make inferences on age and sex differences across the samples obtained in the previous experiment using perceptual voice profiling. Make a note of differences in pitch, loudness, quality and voice control. Explain how voice reflects one's personality and other social needs.
- Perform an acoustic voice analysis on phonation sample and generate a voice report based on acoustic findings. Compare findings between men & women.
- Perform MPT and s/z ratio. Infer differences across age and sex.
- Perform spirometry or any other appropriate aerodynamic procedure. Infer differences across age and sex.
- Perform acoustic analysis on five abnormal voice samples.
- Observe and document findings from five laryngeal examinations (pre-recorded or live) such as VLS, stroboscopy or any other relevant.
- Administer a PROM on five individuals. Prepare a vocal hygiene checklist.
- Demonstrate therapy techniques such as vocal function exercise, resonant voice therapy, digital manipulation, push pull, relaxation exercises.

Total Hours 75

Text Books:

1. Stemple, J.C., Glaze, L.E., & Gerdeman, B, K. (2014). Clinical voice pathology: Theory & Management (5thEd.). San Diego: Plural publishers.
2. Aronson, A.E. & Bless, D.M. (2009). Clinical Voice Disorders. (4thEd.). New York: Thieme, Inc.
3. Boone, D.R., McFarlane, S.C, Von Berg, S.L. & Zraick, R, I. (2013): The Voice and Voice Therapy. (9thEd.). Engle wood Cliffs, Prentice- Hall, Inc. New Jersy.
4. Professional Voice: Assessment and Management. Proceedings of the national workshop on "Professional Voice: Assessment and management", 9-10 Dec 2010. All India Institute of Speech & Hearing, Mysore. 2010.
5. Andrews, M.L. (2006). Manual of Voice treatment: Pediatrics to geriatrics (3rdEd.). Thomson Delmar Learning.
6. Colton, R. H, Casper, J. K. & Leonard, R. (2006). Understanding voice problems. Baltimore: Williams& Wilkins.
7. Sapienza, C.M., & Ruddy, BH. (2013). Voice Disorders. (2ndEd.). San Diego: Plural Publisher.
8. Voice: Assessment and Management. Proceedings of the national workshop on "Voice: Assessment and management", 14 -15 Feb 2008. All India Institute of Speech & Hearing, Mysore. 2008.

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the parameters of the voice, its development, its subsystem required for phonation.
2. Differentiate what type of voice disorders, its etiology and pathophysiology behind it
3. To analyze the voice disorders by perceptual, visualization, acoustic, aerodynamic and self reporting.
4. To know how to give voice therapy, its techniques, preventive measures, counselling and vocal hygiene programs.
5. To acquire knowledge about the voice disorders and formulating its intervention strategies.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Speech Sound Disorders

Semester III
22BASC15

Hours of Instruction/week: 4+1
No. of Credits: 3

Objectives

- To describe normal speech sound development and characterization of individuals with speech sound disorders.
- To perform phonological analysis and assessment of speech sound disorders
- To plan intervention for individuals with speech sound disorders.

Unit I: Speech sound acquisition and development **12**

- Fundamentals of articulatory phonetics - phonetic description of vowels & consonants.
- Phonology & phonological theories – generative phonology, natural phonology. Phonology & phonological theories – non-linear phonology, optimality theory. Methods to study speech sound acquisition – diary studies, cross sectional studies and longitudinal studies.
- Speech sound acquisition and factors influencing speech sound acquisition
- Acoustics of speech sounds
- Speech intelligibility, factors affecting speech intelligibility, assessment of speech intelligibility
- Co articulation: types and effects
- Phonological development in bilingual children. Phonological development in Indian languages.

Unit II: Assessment of speech sound disorders- I **12**

- Current concepts in terminology and classification of speech sound disorders Organically-based speech sound disorders, childhood apraxia of speech. Speech sound disorders of unknown origin, classification by symptomatology.
- Factors related to speech sound disorders
    - Structure and function of speech & hearing and oro-sensory mechanisms.
    - Cognitive – linguistic, psychosocial and social factors.
    - Metalinguistic factors related to speech sound disorders.
- Introduction to assessment procedures: aims of assessment, screening and comprehensive assessment.
- Speech sound sampling procedures - issues related to single word and connected speech samples; imitation and spontaneous speech samples, contextual testing, recording of speech samples.
- Review of tests in English and other Indian languages - Single word articulation tests, deep articulation of articulation, and computerized tests of phonology.
- Influence of language and dialectal variations in assessment.
- Transcription of speech sample - transcription methods –IPA and extension of IPA; broad and narrow transcription.

Unit III: Assessment of speech sound disorders-II 12

- Introduction to independent and relational analysis.
- Independent analyses – phonetic inventory, phonemic inventory and phonotactic inventory (utility of independent analysis for analysis of speech of young children and children with severe speech sound disorders).
- Relational analyses – SODA, pattern analysis, (distinctive features, phonological process analysis).
- Phonological processes analyses - language specific issues, identification and classification of errors.
- Assessment of oral peripheral mechanism.
- Speech sound discrimination assessment, phonological contrast testing. Stimulability testing.
- Determining the need for intervention – speech intelligibility and speech severity assessment.
- Factors influencing target selection – stimulability, frequency of occurrence, developmental appropriateness, contextual testing, and phonological process analysis.
- Case study – Documenting the assessment findings and determining the need for intervention.

Unit IV: Management 12

- Basic considerations in therapy – target selection, basic framework for therapy, goal-attack strategies, organizing therapy sessions, individual vs. group therapy.
- Treatment continuum – establishment, generalization and maintenance; measuring clinical change.
- Facilitation of generalization.
- Maintenance and termination from therapy.
- Motor-based treatment approaches – Principles of motor learning. Discrimination/ear training and sound contrast training.
- Establishing production of target sound – imitation, phonetic placement, successive approximation, context utilization.
- Traditional approach, contextual/sensory-motor approaches.
- General guidelines for motor-based treatment approaches
- Use of technology in articulation correction

Unit V: Management -II 12

- Core vocabulary approach.
- Introduction to linguistically-based treatment approaches- Distinctive feature therapy. Minimal pair contrasts therapy.
- Metaphon therapy, Cycles approach. Broad-based language approaches.
- General guidelines for linguistically-based approaches. Phonological awareness and phonological disorders.
- Phonological awareness intervention for preschool children.
- Adapting intervention approaches to individuals from culturally and linguistically diverse backgrounds.
- Role of family in intervention for speech sound disorders.

Practicals 15

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

- Identify the vowels and consonants of your language on the IPA chart and practice the IPA symbols by transcribing 25 words.
- Make a list of minimal pairs (pairs of words which differ by only one phoneme) in English.
- Make a list of minimal pairs in any language other than English.
- Identify the stages of speech sound acquisition by observations from videos of children from birth to 5 years of age.
- Record the speech of a two year old typically developing child, transcribe and analyze the speech sample.
- Record the speech of one typically developing child from 3-5 years of age (include single word and connected speech samples), transcribe the sample, and perform phonological assessment.
- Analyze transcribed speech samples of typically developing children – practice independent and relational analysis.
- Practice instructions for phonetic placement of selected sounds.
- Develop a home plan with activities for any one section of phonological awareness in English and in one Indian language.

Total Hours 75

Course outcomes: On the successful completion of the course, students will be able to

1. Acquire knowledge about the phonological theories and speech sound development
2. To obtain knowledge about the classification of speech sound disorder, and the factors affecting it
3. To administrate the assessment procedures for the speech sound disorders and the factors affecting it
4. To execute the therapy plans for articulation and phonology, and basic considerations in therapy
5. To gain knowledge about the therapeutic techniques for the articulation and phonology and the role of family members in the intervention procedures.

Text Books:

1. Bernthal, J.E., Bankson, N.W., & Flipsen, P. (2013). Articulation and phonological disorders. (7th Ed.). Boston, MA: Pearson.
2. Dodd, B. (2013). Differential diagnosis and treatment of children with speech disorder.(2nd Ed). NJ: Wiley.
3. Rout, N (Ed)., Gayathri, P., Keshree, N and Chowdhury, K (2015). Phonics and Phonological Processing to Develop Literacy and Articulation; A Novel Protocol. A publication by NIEPMED, Chennai. Freely downloadable from http://niepmd.tn.nic.in/publication.php. ISBN 978-81-928032-9-5
4. Vasanta, D. (2014). Clinical applications of phonetics and phonology. ISHA Monograph. Vol 14, No. 1.Indian Speech & Hearing Association.

5. Velleman, S. L (2003). Resource guide for Childhood Apraxia of Speech. Delmar/Thomson Learning.
6. Williams, A., McLeod, S., & McCauley, R. (2010). Interventions for speech sound disorders in children. Baltimore: Brookes.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Diagnostic Audiology- Behavioral Tests

Semester III
22BASC16

Hours of Instruction/week: 4+1
No. of Credits: 3

Objectives

- To enable the students to choose individualized test battery for assessing cochlear pathology, retro cochlear pathology, functional hearing loss, CAPD, vestibular dysfunctions, tinnitus and hyperacusis
- To enhance the students to independently run the tests and interpret the results to identify the above conditions and also use the information for differential diagnosis
- To make adjustments in the test parameters to improve sensitivity and specificity of tests and make appropriate diagnosis based on the test results and suggest referrals.

Unit I: Introduction to Diagnostic Audiology **12**

- Characteristics of a diagnostic test, difference between screening and diagnostic test, functions of a diagnostic test in Audiology
- Need for test battery approach in auditory diagnosis and integration of results of audiological tests, cross-check principle
- Concept of sensitivity, specificity, true positive, true negative, false positive, false negative, hit rate
- Definition of behavioral and physiological tests and their characteristics in diagnostic audiology
- Theories and physiological bases of recruitment Theories and physiological bases of adaptation
- Clinical indications for cochlear pathology, retro-cochlear pathology, central auditory processing disorders, functional hearing loss, vestibular disorders

Unit II: Tests to identify cochlear and recto cochlear pathology **12**

- ABLB, MLB and SISI tests Behavioral tests of adaptation Bekesy audiometry
- Brief tone audiometry PIPB function Glycerol test
- Test to identify dead regions of cochlea

Unit III: Tests to diagnose functional hearing loss **12**

- Behavioral and clinical indicators of functional hearing loss
- Pure tone tests including tone in noise test, Stenger test, BADGE, Pure tone DAF Speech tests including Lombard test, Stenger test, lip-reading test, Doerfler-Stewert test, Low level PB word test, Yes-No test, DAF test
- Identification of functional hearing loss in children: Swinging story test, Pulse tone methods

Unit IV: Assessment of central auditory processing **12**

- Definition, different behavioral processes
- Behavioral and clinical indicators of central auditory processing disorders Bottle neck and subtlety principles and their implications in
- Tests to detect central auditory processing disorders

- Monaural low redundancy tests - filtered speech tests, time compressed speech test, speech-in-noise test, SSI with ICM, other monaural low redundancy tests.
- Dichotic speech tests – Dichotic digit test, staggered spondaic word test, Dichotic CV test, SSI with CCM, Competing sentence test, other dichotic speech tests.
- Binaural interaction tests – RASP, BFT, MLD, other binaural interaction tests Tests of Temporal processing – pitch pattern test, duration pattern tests, other temporal ordering tests, gap detection test, TMTF
- Variables influencing the assessment of central auditory processing: Procedural and subject variables
- Test findings of important tests in subjects with central auditory disorders: brainstem lesion, cortical, CAPD in children.

Unit V: Assessment of persons with vestibular disorder, tinnitus, hyperacusis 12

- Introduction to structure and function of vestibular system Vestibular ocular reflex and vestibulo spinal reflex Overview on other systems involved in balance
- Signs and Symptoms of vestibular disorders
- Team in the assessment and management of vestibular disorders
- Behavioral tests to assess vestibular functioning: Fukuda stepping test, tandem gait test, finger nose pointing, Romberg test, Sharpened Romberg test, Dix-Hall pike test, Log-roll test
- Overview of tinnitus and hyperacusis and tests for assessment
- Pitch matching, loudness matching, residual inhibition, Feldman masking curves Johnson Hyperacusis Dynamic Range Quotient

Practicals 15

- Administer ABLB, MLB and prepare ladder gram (ABLB to be administered by blocking one ear with impression material)
- Administer classical SISI on 3 individuals and note down the scores Administer tone decay tests (classical and its modifications) and note down the results (at least 3 individuals)
- Administer Bekesy audiometry Administer Brief tone audiometry
- Plot PIPB function using standardized lists in any 5 individuals
- Administer the tests of functional hearing loss (both tone based and speech based) by asking subject to malinger and having a yardstick of loudness.
- Administer CAPD test battery to assess different processes on 3 individuals and note down the scores
- Administer Fukuda stepping test, Tandem gait test, Finger nose pointing, Romberg test, Sharpened Romberg test, Dix-Hallpike test, Log-roll test on 5 of the individuals each and note down the observations.
- Estimate the pitch and loudness of tinnitus in 2 persons with tinnitus (under supervision). Assess the residual inhibition in them.
- Plot Feldman masking curves for a hypothetical case
- Administer Johnson Hyperacusis Dynamic Range Quotient on any 2 of the individuals and note down the scores

Total Hours 75

Text Books:

1. Gelfand, S.A. (2009). Essentials of Audiology. Thieme.
2. Hall, J.W., & Mueller, H.G. (1996). Audiologists' Desk Reference: Diagnostic audiology principles, procedures, and protocols. Cengage Learning.
3. Jerger, J. (1993). Clinical Audiology: The Jerger Perspective. Singular Publishing Group.
4. Katz, J., Medwetsky, L., Burkard, R. F., & Hood, L. J. (Eds.). (2007). Handbook of Clinical Audiology (6th revised North American edition). Philadelphia: Lippincott Williams and Wilkins.
5. Martin, F.N., & Clark, J.G. (2014). Introduction to Audiology (12edition). Boston: Pearson.
6. Roeser, R.J., Valente, M., & Hosford Dunn, H. (2007). Audiology: Diagnosis. Thieme.
7. Stach, B.A. (2010). Clinical audiology: an introduction (2nded). Clifton Park, NY: Delmar Cengage Learning

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the difference between the screening and diagnostic test, need for the test battery approaches.
2. To acquire knowledge about the test to rule out the cochlear and retro cochlear pathology and its interpretations
3. To identify the functional hearing loss with behavioral, pure tone, speech kind of tests.
4. To understand the concepts of central auditory processing disorders, its clinical indicators, tests to identify CAPD and the factors affecting it.
5. To know about the overview of vestibular disorders, tinnitus and hyperacusis. And also to do the subjective and objective test for assessment and it management

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Practicals-II (Speech-Language Pathology)

Semester III **Hours of Instruction/week: 8**

22BASC17 **No of Credits: 4**

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

- Administer tools to assess language abilities
- Examine the oral structures by performing OPME
- Administer case history

Practical's:

- Procedures to obtain a speech language sample for speech & language assessment from children of different age groups such as, pre schoolers, kindergarten, primary school and older age groups.
- Methods to examine the structures of the oral cavity/organs of speech.
- The tools to assess language abilities in children (with hearing impairment, specific language impairment & mixed receptive language disorder).
- Development of speech sounds in vernacular and linguistic nuances of the language.
- To evaluate speech and language components using informal assessment methods.
- To administer at least two standard tests for childhood language disorders.
- To administer at least two standard tests of articulation/ speech sounds.
- To assess speech intelligibility.
- Analysis of language components – Form, content & use – minimum of 2 samples.
- Analysis of speech sounds at different linguistic levels including phonological processes – minimum of 2 samples.
- Transcription of speech language samples – minimum of 2 samples.
- Analyze differences in dialects of the local language.
- Case history - minimum of 5 individuals with speech & language disorders.
- Oral peripheral examination - minimum of 5 individuals.
- Language evaluation report – minimum of 5. Speech sound evaluation report – minimum of 5.

Total hours-120 hours

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the methods to examine the oral structures, Intelligibility, language components.
2. Administer assessment tools for language disorders, Hearing Disorders.
3. Acquire knowledge and administer case history.
4. Prepare language evaluation report
5. Analyze language components, speech sounds, dialects.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Practicals-II (Audiology)

Semester III **Hours of Instruction/week: 8**
22BASC18 **No of Credits: 4**

Objectives:

- To understand the methods of calibration, different types of hearing loss.
- To obtain detail case history, tuning fork tests and pure tone audiometry.

Practicals:

- Methods to calibrate audiometer.
- Materials commonly employed in speech Audiometry.
- Calculation pure tone average, % of hearing loss, minimum and maximum masking levels.
- Different types of hearing loss and its common causes
- To obtain detailed case history from clients or parents/guardians.
- To carryout commonly used tuning fork tests.
- To administer pure tone Audiometry including appropriate masking techniques on adults using at least techniques
- To administer tests to find out speech reception threshold, speech identification scores, most comfortable and uncomfortable levels on adults.
- Plotting of audiograms with different degree and type with appropriate symbols – 2 audiograms per degree and type Detailed case history taken and its analysis
- Calculation degree, type and percentage of hearing loss on 5 sample conditions
- Case history on at least 5 adults and 3 children with hearing disorders
- Tuning fork test on at least 2 individuals with conductive and 2 individuals with sensori-neural hearing loss
- Pure tone audiometry with appropriate masking on 5 individuals with conductive, 5 individuals SN hearing loss and 3 individuals with unilateral/asymmetric hearing loss – 5

Total hours-120 hours

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the methods of calibration
2. Administer case history, tuning fork tests, pure tone audiometry.
3. Acquire knowledge about different types of hearing loss.
4. Plot audiograms and calculate the degree, type and percentage of hearing loss.
5. Understand the masking technique and speech audiometry.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Discipline Specific Elective (DSE - III) Course
Amplification Devices

Semester III **Hours of Instruction/Week: 4+1**
22BASD03 **Number of Credits: 3**

Objectives

- To help the students assess the candidacy for hearing aids and counsel accordingly evaluate the listening needs and select the appropriate hearing aid
- Independently program digital hearing aids as per the listening needs of the client and independently assess the benefit from the hearing aid using subjective and objective methods
- Make all types of ear molds, counsel the parents/care givers at all stages

Unit I: Types of hearing aids **12**

- Historical development of hearing aids: development of concept of amplification, development of different types of amplification devices
- Review of basic elements of hearing aids: Microphone, Amplifier, Receiver/vibrator, Cords, Batteries.
- Classification and Types of hearing aids
- Body level, ear level, in the ear, ITC, invisible in the canal, CIC Binaural, pseudo binaural, monaural
- Programmable, trimmer digital and digital hearing aids Directional hearing aids, modular hearing aids
- RIC hearing aids Implantable hearing aids Master hearing aids CROS hearing aids
- Group amplification – hard wired, induction loop, FM, infrared
- Assistive listening devices – types and selection (Telephones, Television, typing technology)

Unit II: Technological aspects in Hearing Aids **12**

- Routing of signals, head shadow/baffle/diffraction effects
- Output limiting and issues related to them: peak clipping, compression
- Concept and use of compression in hearing aids: BILL, TILL, PILL, Wide Dynamic Range Compression, Syllabic Compression, Dual Compression
- Signal processing in hearing aids – BILL, TILL, PILL Signal enhancing technology
- Noise reduction algorithms
- Extended low frequency amplification, frequency lowering technology (transposition, compression)
- Recent advances in hearing aids

Unit III: Electro-Acoustic Measurements for Hearing Aids **12**

- Purpose and Parameters to be considered: OSPL90, SSPL90,HFA SSPL90, Gain, Full on Gain, HFA Full on Gain, Reference test Gain, Basic Frequency Response, Total Harmonic distortion, Inter modulation Distortion, input Output functions, instrumentation, procedure, variables affecting EAM
- Electro-acoustic measurements, BIS, IEC and ANSI standards Environmental tests. Care, maintenance and troubleshooting of hearing aids

- Counselling and orienting the hearing aid user (Client and significant others)

Unit IV: Selection of Hearing Aids 12

- Pre-selection factors; Prescriptive and comparative procedures; Functional gain and insertion gain methods; Use of impedance, OAEs and AEPs audiometry; Hearing aids for conductive hearing loss; Hearing aids for children; Hearing aids for elderly; Selection of non-linear programmable and digital hearing aids
- Hearing aid programming
- Methods for assessing hearing aid benefit
- Real ear insertion measurements for verification of hearing aid benefit: REIG, REUR, REAR, REOR, RESR, REIG, REAG, RECD
- Acoustic feedback in hearing aids

Unit V: Mechano-acoustic couplers (ear molds) 12

- Different types of molds
- Procedure for hard molds and soft mold UV curing methods
- Special modifications in the ear molds: Vents (diagonal and parallel), deep canal molds, short canal, horns, Libby horn, reverse horn, acoustic modifier
- Effect of Mechano- acoustic couplers on the hearing aid output.

PRACTICALS 15

- Listen to the output of different types and classes of hearing aids (monaural, binaural, analog, digital hearing aids), in different settings
- Troubleshoot hearing aids: Check the continuity of the receiver cord using multi meter, measure the voltage of different sized batteries using multi meter, Check voltage of batteries different types and sizes
- Carry out electroacoustic measurements for the body level and ear level hearing aids Program the hearing aid for different configuration and degrees of hearing loss (at least 5 different audiograms) using different prescriptive formulae
- Program the hearing aid for different listening situations (at least 3 different situations)
- Vary the compression settings in a digital hearing aid and note down the differences in the output
- Perform real ear insertion measurements using different hearing aids (body level and ear level, hearing aids of different gains)
- Compare speech perception through conventional BTE and RIC hearing aids using a rating scale
- Observe assistive listening devices such as telephone amplifier, vibro-tactile alarms, note down the candidacy and their utility.
- Administer a questionnaire to assess hearing aid benefit on 2 persons using hearing aids.
- Carry out a role play activity of counselling a hearing aid user
- Ear Molds-take impression for the ear mold using different techniques, different methods and using different materials
- Make hard moulds for any two ears, make soft moulds for any two ears, make vent in the mould you make.

Total Hours 75

Text Books:

1. Dillon. (2012). Hearing Aids (2 edition). Thieme Medical and ScientificPublisher.
2. Hall, J. W., & Mueller, H. G. (1998). Audiologists' Desk Reference: Audiologicmanagement, rehabilitation, and terminology. Singular Publishing Group.
3. Kates, J. M. (2008). Digital Hearing Aids (1 edition). San Diego: PluralPublishing Inc.
4. Metz, M. J. (2014). Sandlin's Textbook of Hearing Aid Amplification: Technicaland Clinical Considerations. Plural Publishing.
5. Mueller, H. G., Hawkins, D. B., & Northern, J. L. (1992). Probe MicrophoneMeasurements: Hearing Aid Selection and Assessment. Singular Publishing Group.
6. Mueller, H. G., Ricketts, T. A., & Bentler, R. A. (2007). Modern Hearing Aids: Pre- fitting Testing and Selection Considerations: 1 (1 edition). San Diego, CA:Plural Publishing Inc.
7. Sandlin, R. E. (Ed.). (1989). Handbook of Hearing Aid Amplification: ClinicalConsiderations and Fitting Practices v. 2. Boston: Singular Publishing Group. Sandlin, R. E. (Ed.). (1993). Understanding Digitally Programmable Hearing AIDS. Boston: Allyn & Bacon.
8. Tate, M. (2013). Principles of Hearing Aid Audiology. Springer.
9. Taylor, B., & Mueller, H. G. (2011). Fitting and Dispensing Hearing Aids (1edition). San Diego: Plural Publishing Inc.
10. Valente, M. (2002). Hearing Aids: Standards, Options, and Limitations. Thieme.

Course Outcomes-After completing this course, students will be

1. Able to understand the basic concepts and types of hearing aids and its parts, its historic development, and development of amplification systems
2. Concepts of signal processing, signal enhancing and noise reduction technology
3. To know about electroacoustic measurement of the hearing aids and ANSI, BIS and IEC standards, troubleshooting of hearing aids
4. Able to compare the audiometric test results and select the appropriate type and program of the hearing aid to the patients
5. Able to acquire knowledge about the molds, its types, the processing in making the ear molds and its special modifications.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

English Language for Communication II

Semester IV **Hours of instruction/Week-3**

22BLEN02 **No. of credits-3**

Objectives

- To become familiar with the nuances of academic writing
- To produce short and simple connected texts on familiar topics
- To communicate effectively and appropriately in real-life situations

Unit I Communicate: Outside the Class **9**

Patterns of Language-Modal Verbs
Speaking-Useful Everyday Expressions
Making Language Work-Expressions to Indicate Speculations And Making Inferences

Unit II Communicate: At the Post Office **9**

Patterns of Language-Phrasal Verbs/ Idioms
Speaking-Distinguishing between pairs of expression
Making Language Work-Clipping, Forming Sentences, Converting SMS into Normal Script

Unit III Contemplate: How to Win **9**

Writing: completing a story, dialogue

Unit IV Contemplate: View Points **6**

Speaking: Agreeing/ Disagreeing, expressing one self

Unit V Contemplate: Snakes and Ladders **6**

Contemplate: Your Self
Speaking: Making comparisons
Writing: Preparing lists

Assignments and Activities in Class: **6**

(a) Model question paper in the text book
(b) Vocabulary building, analyzing poems and listening activities (from CD)

Total Hours 45

Text Book

1. Krishnaswamy N, sriraman T, Creatinve English for Communication, 2 nd ed. Haryana, Macmillan, 2012.

Reference books

1. Das, Bikram K, Functional Gramer and Spoken and Written communication in English (A Short friendly Edition), New Delhi: Orient Black Swan, 2010.
2. Mudbhatkel, Maya and Saraswathi, English for Competitive Exminations, Emerald Publishers, 2003.
3. Rajeevan, Geetha and Kiranmani Dutt, Basic Communication Skills, New Delhi: Fooundation Books, 2010
4. Rajeevan K and Radhakrishna Pillai, Spoken English For You, Chennai: Emerald Publishers, 2014

Course Outcomes: At the end of the course students will be able to

1. Use increased vocabulary in their writing
2. Use expressions in appropriate context
3. Use the English language accurately and appropriately for different purposes
4. Understand hoe phrasal verbs, idioms enrich language
5. Demonstrate effective writing skills.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	H		H	L		M	M		H	M	M		M	L
CO2	H		H	L		M	M		H	M	M		M	L
CO3	H		H	L		M	M		H	M	M		M	L
CO4	H		H	L		M	M		H	M	M		M	L
CO5	H		H	L		M	M		H	M	M		M	L

Motor Speech Disorders in Children

Semester IV **Hours of Instruction/week: 4+1**

22BASC19 **No of Credits: 3**

Objectives:

- To describe the characteristics of motor speech disorders in children such as cerebral palsy, childhood apraxia of speech and other childhood dysarthrias
- To assess the speech and non-speech aspects associated with the above conditions plan
- To execute therapy strategies for children with motor speech disorders

Unit I Neuro-developmental processes in speech production and motor speech disorders **12**

- Review of neuro-anatomy (cerebral cortex, sub-cortical structures, brainstem, cerebellum, spinal cord & cranial nerves, pyramidal and extra-pyramidal systems) Sensory-motor integration (spatial temporal planning, motor planning and feedback) Anatomic development of speech production systems
- Development of neural pathways of speech motor control (brain maturation, reflexes, sensory and motor)
- Dysarthria in children – cerebral palsy – disorders of tone (spastic, flaccid): definition, etiology, characteristics and associated problems
- Dysarthria in children – cerebral palsy – disorders of movement (hyperkinetic, hypokinetic) and disorder of balance (ataxia): definition, etiology, characteristics and associated problems
- Dysarthria in children – lower motor neuron and other syndromes with motor speech disorders
- Childhood apraxia of speech and nonverbal oral apraxia: definition, characteristics and classification

Unit II Assessment of motor speech disorders in children **12**

- Case history and developmental neurological evaluation – primitive postural and oropharyngeal reflexes, cranial nerve examination
- Assessment of oral sensory and motor capacity – Oral peripheral mechanism examination, neuro- muscular status
- Assessment of speech sub-systems – quantitative and qualitative
- Assessment of speech intelligibility and comprehensibility
- Assessment of associated problem
- Speech assessment with specific reference to childhood apraxia of speech – Phonetic and phonemic inventory, phonotactics and syllable sequencing, variability of errors, speech intelligibility, fluency and prosody
- Test materials – checklist for childhood apraxia of speech, screening test for developmental apraxia of speech
- Protocols for non-verbal and verbal praxis specific to Indian languages
- Differential diagnosis- dysarthria and other developmental disorders

- Differential diagnosis - childhood apraxia of speech and other developmental disorders

Unit III Management of childhood dysarthria **12**

- Team approach in rehabilitation of motor speech disorders in children
- Neuro-developmental therapy
- Non speech oral-motor exercises: its application for children with dysarthria
- Management of drooling Behavioral management of respiratory, phonatory, resonatory and articulatory subsystems
- Prosthetic appliances in treatment of childhood dysarthria
- AAC in management of motor speech disorders- role of devices, AAC team, candidacy and pre-requisites, symbol selection, techniques, assessment for AAC, effective use of AAC
- Case studies: Planning intervention for children with dysarthria

Unit IV Management of childhood apraxia of speech **12**

- Principles of motor learning
- Integral stimulation – dynamic temporal cueing
- Multisensory and tactile cueing techniques (moto kinesthetic speech training, sensory motor approach, PROMPTS, Touch cue method & speech facilitation)
- Gestural cueing techniques (signed target phoneme therapy, adapted cueing techniques, cued speech, visual phonics,& Jordon's gestures)
- Miscellaneous techniques (melodic intonation therapy, multiple phonemic approach,& instrumental feedback)
- Cognitive/conceptual/ linguistic /phonological remedial approaches - phonotactics
- Other approaches: Vowel and diphthong remediation techniques (Northampton(Yale) vowel chart and Alcorn symbols), Nancy Kauffman's speech praxis treatment kit
- Use of AAC in childhood apraxia of speech
- Evidence-based practice in intervention for childhood apraxia of speech
- Case studies: Planning intervention for childhood apraxia of speech

Unit V Feeding and swallowing disorders in children **12**

- Embryology- periods and structures of development
- Anatomical structures of swallowing- upper aero digestive system, anatomic difference between adults and children
- Physiology of swallowing- swallow phases, neural control of swallowing, reflexes related to swallowing, suckling and sucking, airway and swallowing
- Terms involved in dysphagia and development of feeding skills
- Causes of dysphagia in children
- Signs and symptoms of dysphagia in children
- Assessment – inferences from neural developmental assessment, cranial nerve examination, assessment scales, nutritive and non-nutritive assessment, instrumental assessment (VFS, cervical auscultation), gastrointestinal evaluation

- Management: positioning, oral- motor treatment, team approach, non-oral feeding, transitional feeding, modifications in feeding
- Role of speech-language pathologist in neonatal intensive care with reference to feeding and swallowing

PRACTICALS **15**

1. With the help of models, charts and software, identify the motor control centers in the brain.
2. Perform oro-motor examination in five children and adults and compare
3. Identify oro-motor reflexes (rooting, suckling, & phase bite) in 5 infants.
4. Demonstrate normal posture and breathing patterns required for varied speech tasks.
5. Alter the postures and breathing patterns and notice changes in speech patterns.
6. Assess DDK rate in five typically developing children.
7. Rate intelligibility of speech in five typically developing children. Discuss factors that influenced speech intelligibility and their ratings.
8. Observe and record (a) physical status, (b) oral sensory motor abilities and vegetative skills, (c) respiration, (d) phonation, (e) resonation, (f) articulation and (g) language abilities in five typically developing children. Compare these with observations made from children with motor speech disorders.
9. Perform oro-motor exercises – isotonic and isometric. Discuss strategies to modify exercises for children.
10. Identify from video the AAC system such as low technology vs. high technology systems and different symbol system, that is, Bliss symbols, IICP symbols and different signing systems – Makaton.
11. Observe feeding and swallowing skills in different age groups of children: 2newborns; 2 infants, 2 toddlers, and 2 older children. Identify the differences in feeding methods, food consistencies, texture, quantity, feeding habits, feeding appliances used by these children.

Total Hours 75

Text Books:

1. Arvedson, J.C., and Brodsky, L. (2002) (2nd Ed.). Pediatric swallowing and feeding. San Diego, Singular publishing.
2. Caruso, F. J. and Strand, E. A. (1999). Clinical Management of Motor Speech Disorders in Children. New York: Thieme.
3. Hardy, J. (1983). Cerebral Palsy. Remediation of Communication Disorder Series by F.N. Martin. Englewood Cliffs, Prentice Hall Inc.
4. Love, R.J. (2000) (2nd Ed). Childhood Motor Speech Disorders. Allyn & Bacon.
5. Love, R.J. and Webb, W.G. (1993). (2nd Ed.) Neurology for the Speech-Language
6. Pathologist. Reed Publishing (USA)
7. Rosenthal. S., Shipp and Lotze (1995). Dysphagia and the child with developmental disabilities. Singular Publishing Group.
8. Velleman, S. L (2003). Resource guide for Childhood Apraxia of Speech. Delmar/Thomson Learning.

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the concepts of neuroanatomy, development of its neural pathways, and disorders of dysarthria and apraxia of speech in children.
2. Assess the reflexes, OPME, subsystems of speech, speech intelligibility in children.
3. Acquire knowledge about the management of dysarthria in children
4. To know about the team approach and the therapy of speech language pathologist for the childhood apraxia of speech
5. To obtain knowledge about the anatomy and physiology of the swallowing, its development, and the issues in feeding its management.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Child Language Disorders

Semester IV **Hours of Instruction/week: 4+1**

22BASC20 **No of Credits: 3**

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

- Explain the process of acquisition of language and factors that influence its development in children and identify.
- Assess language delay and deviance in children and select appropriate strategies for intervention.
- Counsel and provide guidance to parents/caregivers of children with language disorders.

Unit I Bases of language acquisition, development and disorders **12**

- Theories of language acquisition 1: Biological, Psycholinguistic/syntactic theory
- Theories of language acquisition 2: Cognitive, social interaction/pragmatic, information processing, behavioral
- Pre-cursors for normal development of language
- Development of components of language from birth to two years (pre-linguistic/ pre symbolicto symbolic)
- Development of components of language during preschool period
- Development of components of language during early school age and beyond
- Basic concepts and terminologies of language development in bilingual children –simultaneous versus sequential language acquisition, additive and subtractive bilingualism, process of second language acquisition, variables influencing second language acquisition
- Development of language in culturally diverse environments and exceptional circumstances – neglect and abuse, twins, low-socio economic background
- Over view of language disorders – definition and classification based on ICD, DSM
- Application of ICF in language disorders

Unit II Language disorders – definition, classification, causes, and characteristics **12**

- Intellectual disability: definition, classification, causes and characteristics
- Autism spectrum disorders: definition, classification, causes and characteristics
- Attention deficit hyperactive disorder: definition, classification, causes and characteristics
- Language impairment - mixed receptive and expressive language disorder, specific language impairment: definition, classification, causes and characteristics
- Learning disability: definition, classification, causes and characteristics
- Acquired childhood aphasia: definition, classification, causes and characteristics

- Sensory impairments and language disorders: types, causes and characteristics
- Syndromic conditions leading to language difficulties: William syndrome, fragile x syndrome, Down syndrome
- Other developmental disabilities: deaf-blind, cerebral palsy and multiple disabilities

Unit III Assessment of language in children 12

- Preliminary components of assessment: Case history, screening, evaluation of environmental, linguistic & cultural variables.
- Methods to assess children with language disorder: Formal versus informal assessment; types of assessment materials: assessment scales, observational checklists, developmental scales; standardization, reliability, validity, sensitivity and specificity of test materials
- Informal assessment - pre-linguistic behavior, play, mother-child interaction
- Language sampling: planning and collecting representative sample; strategies to collecting language sample, audio-video recording, transcription
- Analysis of language sample: Specific to various components of language such as phonology, morphology, syntax, semantics and pragmatics.
- Test materials for assessing language skills: Assessment of Language Development(ALD), 3D-Language Assessment Test, Linguistic Profile Test, Com-DEALL checklist, other Indian and global tests
- Test materials used for children with developmental delay, intellectual disability: Madras Developmental Program Scale, Bayley's Scale for infant and toddler development
- Test materials used for children with autism spectrum disorder: Modified-Checklist for Assessment of Autism in Toddlers, Childhood Autism Rating Scale, Indian Scale for Assessment of Autism
- Other test materials used for children with ADHD, ACA, LD (NIMH battery for assessment of Learning Disability)
- Documenting assessment results: diagnostic report, summary report and referral report specific to disorder. Differential diagnosis of language disorders in children

Unit IV Management of language disorders in children – I 12

- General principles and strategies of intervention in children with language impairment – purpose of intervention, basic approaches to language intervention(developmental or normative approach, functional approach)
- Types of service delivery models - Individuals versus group; direct versus tele-rehabilitation; structure of therapy session, setting the environment, furniture, seating arrangements
- Reinforcement in language therapy, types and schedules of reinforcement
- Choice of language for intervention, incorporating principles of multiculturalism into treatment activities
- Choosing and framing goals and Objectives: SMART Objectives
- Specific treatment techniques Incidental teaching, self-talk, parallel talk, expansion, extension, recasting, joint routines, joint book reading, whole language, modifying linguistic input, communicative temptations drill, modelling
- Focused stimulation, vertical structuring, milieu teaching, and model

- Caregivers and family in intervention: Structured and informal approaches

Unit V Management of language disorders in children – II **12**

- Team approach to intervention
- Augmentative and alternative communication – types (aided and unaided) and application in child language disorders
- Specific approaches to management of children with Autism: PECS, Lovaas, TEACCH, Com-DEALL, ABA, Facilitated Communication
- Approaches to management of children with LD
- Strategies to facilitate language skills in children with disorders such as intellectual disability: Redundancy, chunking, chaining
- Use of technology in language intervention
- Home plan and counselling for children with language disorders
- Documentation specific to the disorder: pre-therapy; lesson plan; SOAP notes
- Documentation specific to the disorder: summary report, referral report
- Decision making in therapy: transition to next objective, termination of therapy

PRACTICALS **15**

1. Record mother-child interaction of one typically developing child in the age range of0-1, 1-2, 2-4, 4-6 and 6-8 years of age. Compare linguistically the outputs from them other and the child across the age groups. Make inferences on socio cultural influences in these interactions.
2. Make a list of loan words in two familiar languages based on interaction with 10typically developing children in the age range of 2-4, 4-6, 6-8 and 8-10 years.
3. Discuss the influence of bi- or multilingualism on vocabulary.
4. Record a conversation and narration sample from 3 children who are in preschool kindergarten, and primary school. Perform a language transcription and analyze for form, content and use.
5. Administer 3D LAT, ALD, LPT, Com DEALL checklist on 2 typically developing children.
6. Draft a diagnostic report and referral letter for a child with language disorder.
7. Demonstrate general language stimulation techniques and discuss the clinical application.
8. Demonstrate specific language stimulation techniques with appropriate materials and discuss its clinical applications.
9. Draft Subjective Objective Assessment Plan (SOAP) for a pre-recorded sample of a45 minute session of intervention for a child with language disorder.
10. Draft a lesson plan for a child with language disorder.
11. Draft a discharge summary report for a child with language disorder

Total Hours 75

Text Books:

1. Roseberry-McKibbin, C. (2007). Language Disorders in Children: A multicultural and case perspective. Boston: Pearson Education, Inc.
2. Paul, R. (2013). Language disorders from infancy through adolescence (4th ed.).
3. St.Louis, MO: Mosby.Dwight, D.M. (2006). Here's how to do therapy: Hand-on core skills in speech language pathology. San Diego, CA: Plural Publishing
4. Hegde, M.N. (2005). Treatment protocols for language disorders in children – Vol. 1San Diego: Plural Publishing

5. Owens, R.E. (2008). Language development: An introduction (7th ed.). Boston: Pearsons
6. Reed, V.A. (2004). An Introduction to children with language disorders (3rd Ed.)New York: Allyn & Bacon
7. Rout, N and Kamraj, P (2014). Developing Communication - An Activity Book, A publication by NIEPMED, Chennai. Freely downloadable from
8. http://niepmd.tn.nic.in/publication.php. ISBN 978-81-928032-41.

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the bases of language acquisition, development and disorders
2. Define, classify the Language disorders.
3. To asses language in children
4. Acquire knowledge about management of language disorders in children
5. Administer standardized test for normal and clinical population.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Diagnostic Audiology-Physiological Tests

Semester IV **Hours of Instruction/week: 4+1**
22BASC21 **No of Credits: 3**

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

- Justify the need for using the different physiological tests in the audiological assessment
- Independently run the tests and interpret the results to detect the middle ear, cochlear and retro cochlear pathologies and also differentially diagnose
- Design tailor-made test protocols in immittance, AEPs and OAEs as per the clinical need make appropriate diagnosis based on the test results and suggest referrals.

Unit I Immittance evaluation **12**

- Clinical significance of physiological tests in audiology
- Immittance evaluation: Principle of immittance evaluation: Concept of impedance and admittance, their components,
- Tympanometry: definition, measurement procedure, response parameters, their measurement and normative, classification of tympanogram, clinical significance of tympanometry
- Eustachian tube functioning tests of tympanometry: basics of pressure equalization function of ET, Valsalva, Toynbee, William's pressure swallow, inflation-deflation test.
- Overview on multicomponent and multi-frequency tympanometry
- Overview on wide band reflectance and wide band tympanometry
- Reflexometry: definition, acoustic reflex pathway, measurement procedure, clinical applications of acoustic reflexes, special tests

Unit II Auditory evoked potentials (AEPs): Auditory brainstem response (ABR) **12**

- Introduction and classification of AEPs
- Instrumentation
- Principles of AEP recording techniques:
- Auditory brainstem response generators
- Protocol and procedure of recording auditory brainstem response
- Factors affecting auditory brainstem responses
- Clinical applications of ABR
- ABR in the pediatric population
- Role of ABR in infant hearing screening

Unit III Overview of other AEPs 12

- ECochG
- Auditory Middle Latency Responses (AMLR) and their clinical applications
- Auditory Long Latency Responses (Obligatory responses) and their clinical applications
- Other long latency potentials such as P300, MMN, P600, N400, T-complex, CNV)and their clinical applications
- ASSR: Instrumentation, recording and clinical applications
- Brainstem responses to speech and other complex signals

Unit IV Otoacoustic emissions 12

- Introduction to otoacoustic emissions
- Origin and classification of OAEs
- Instrumentation
- Procedure of OAE measurement: SOAE, TEOAEs, and DPOAEs
- Interpretation of results: SOAE, TEOAEs, and DPOAEs
- Clinical applications of OAEs: SOAE, TEOAEs, and DPOAEs
- Contralateral suppression of OAEs and its clinical implications

Unit V Physiological tests for assessment of vestibular system 12

- Electronystagmography: procedure, interpretation, clinical applications
- Video nystagmography, video occulograph
- Vestibular Evoked Myogenic Potentials
- Overview of Rotatory chair test, video Head Impulse Test,
- Overview of Dynamic Posturography

PRACTICALS 15

1. Measure admittance in the calibration cavities of various volumes and note down the observations
2. Calculate Equivalent ear canal volume by measuring static admittance in an uncompensated tympanogram (10 ears)
3. Do tympanogram in the manual mode and measure peak pressure, peak admittance and ear canal volume manually using cursor (10 ears).
4. Measure gradient of the tympanogram (10 ears)
5. Administer Valsalva and Toynbee and William's pressure swallow test(5 ears)
6. Record acoustic reflex thresholds in the ipsi and contra modes, (10 ears)
7. Plot Jerger box pattern for various hypothetical conditions that affect acoustic reflexes and interpret the pattern and the corresponding condition.
8. Carry out Acoustic reflex decay test and quantify the decay manually using cursor (5individuals).
9. Trace threshold of ABR (in 5 dB nHL steps near the threshold) for clicks and tone bursts of different frequencies (2 persons) and draw latency intensity function.
10. Record ABR using single versus dual channels and, note down the differences
11. Record ABR at different repetition rates in 10/sec step beginning with 10.1/11.1 per second. Latency-repetition rate function needs to be drawn.
12. Record with each of three transducers (HP, insert phones and bone vibrator) and polarities and draw a comparative table of the same. Students should also record with different transducers without changing in the protocol in the instrument and calculate the correction factor required.

13. Record ASSR for stimuli of different frequencies and estimate the thresholds
14. Record TEOAEs and note down the amplitude, SNR, noise floor and reproducibility at octave and mid-octave frequencies. Note down the stimulus stability and the overall SNR (10 ears).
15. Record DPOAEs and note down the amplitude, SNR, noise floor and reproducibility at octave and mid-octave frequencies (10 ears)

Total Hours 75

Text Books:

1. Hall, J. W., & Mueller, H. G. (1996). Audiologists' Desk Reference: Diagnostic audiology principles, procedures, and protocols. Cengage Learning.
2. Hood, L. J. (1998). Clinical Applications of the Auditory Brainstem Response. Singular Publishing Group.
3. Hunter, L., & Shahnaz, N. (2013). Acoustic Immittance Measures: Basic and Advanced Practice (1edition). San Diego, CA: Plural Publishing.
4. Jacobson, G. P., & Shepard, N. T. (2007). Balance Function Assessment and Management (1edition). San Diego, CA: Plural Publishing Inc.
5. Jacobson, J. T. (1985). The Auditory brainstem response. College- Hill Press.
6. Katz, J., Medwetsky, L., Burkard, R. F., & Hood, L. J. (Eds.). (2007). Handbook of Clinical Audiology (6 th revised North American edition). Philadelphia: Lippincott Williams and Wilkins Mc Caslin, D. L. (2012). Electro nystagmography / Video nystagmography (1 edition). San Diego: Plural Publishing.
7. Musiek, F. E., Baran, J. A., & Pinheiro, M. L. (1993). Neuro audiology: Case Studies (1 edition). San Diego, Calif: Singular.
8. Robinette, M. S., & Glattke, T. J. (Eds.). (2007). Otoacoustic Emissions: Clinical Applications (3 rd edition). New York: Thieme.

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the concepts of immittance, its components and the test under that, its procedures and its clinical significance.
2. Acquire knowledge about the auditory brainstem response, its principles, procedure and interpretation and factors affecting the tests.
3. To know about other auditory evoked potentials, its procedure and interpretation
4. Understand the origin of otoacoustic emissions, classification, procedure, interpretation and clinical applications.
5. To do the physiological test for assessment of vestibular systems.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Practicals-III (Speech-Language Pathology)

Semester IV **Hours of Instruction/week: 7**

22BASC22 **No of Credits: 4**

Objectives:

- To understand speech and language stimulation techniques and administer test materials.
- To be able to collect and analyze different sample of voice and speech production.

Practicals:

- Speech & language stimulation techniques.
- Different samples /procedures required to analyse voice production mechanism. (acoustic/ aerodynamic methods / visual examination of larynx/ self evaluation)
- Different samples /procedures required to analyse speech production mechanism in children with motor speech disorders.
- To administer at least two more (in addition to earlier semester) standard tests for childhood language disorders.
- To administer at least two more (in addition to earlier semester) standard tests of articulation/ speech sounds.
- To set goals for therapy (including AAC) based on assessment/test results for children with language and speech sound disorders.
- To record a voice sample for acoustic and perceptual analysis.
- To assess parameters of voice and breathing for speech.
- Assessment protocol for children with motor speech disorders including reflex profile and swallow skills.
- Counseling for children with speech-language disorders. Show: Acoustic analysis of voice – minimum of 2 individuals with voice disorders.
- Simple aerodynamic analysis - minimum of 2 individuals with voice disorders.
- Self evaluation of voice – minimum of 2 individuals with voice disorders.
- Informal assessment of swallowing – minimum of 2 children.
- Assessment of reflexes and pre linguistic skills - minimum of 2 children.
- Pre –therapy assessment and lesson plan for children with language and speech sound disorders - minimum of 2 children each.
- Case history - minimum of 2 individuals with voice disorders.
- Case history - minimum of 2 children with motor speech disorders
- Oral peripheral examination- minimum of 5 children Apply speech language stimulation/therapy techniques on 5 children with language disorders (with hearing impairment, specific language impairment & mixed receptive language disorder)/speech sound disorders – minimum of 5 sessions of therapy for each child.
- Exit interview and counseling - minimum of 2 individuals with speech language disorders.

Total Hours-105 hours.

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the speech and Language stimulation techniques
2. Administer case history for voice and motor speech disorders.
3. Record and analyze different samples of voice and speech production.
4. Acquire knowledge about the pre therapy assessment and lesson plan
5. Understand aerodynamic analysis, perceptual analysis of voice

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Practicals-III (Audiology)

Semester IV **Hours of Instruction/week: 7**

22BASC23 **No of Credits: 4**

Objective:

- To administer tests to CAPD and select type of ear moulds for different population.
- To perform special tests, hearing aid fitment, hearing aid selection and electro acoustic measurement

Practicals:

- Indications to administer special tests
- Procedures to assess the listening needs National and international standards regarding electro acoustic characteristics of hearing aids
- To administer at least 1 test for adaptation, recruitment and functional hearing loss.
- Counsel hearing aid user regarding the use and maintenance hearing aids To troubleshoot common problems with the hearing aids
- To select test battery for detection of central auditory processing disorders.
- Select different types of ear moulds depending on type of hearing aid, client, degree, type and configuration of hearing loss
- Electro acoustic measurement as per BIS standard on at least 2 hearing aids
- How to process 2 hard and 2 soft moulds How to preselect hearing aid depending on listening needs and audiological findings on at least 5 clinical situations (case files)
- How select test battery depending on case history and basic audiological information – 3 situations
- Tone decay test – 2 individuals with sensori-neural hearing loss
- Strenger test – 2 individuals with unilateral/asymmetrical hearing loss
- Dichotic CV/digit, Gap detection test – 2 individuals with learning difficulty or problem in hearing in noise
- Hearing aid fitment for at least 5 individuals with mild to moderate and 3 individuals with mod-severe to profound
- Hearing aid selection with real ear measurement system on 3 individuals with hearing impairment

Total hours-105 hours

Course outcomes: On the successful completion of the course, students will be able to

1. Administer special tests like tone decay, dichotic digits and Stenger test.
2. Perform hearing aid selection and fitment.
3. Acquire knowledge about test batteries for CAPD
4. Process hard and soft moukd for clinical population.
5. Perform electro acoustic measurement and counsel the hearing aid user.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Discipline Specific Elective (DSE - IV) Course
Implantable Hearing Devices

Semester IV **Hours of Instruction/week: 3+1**

22BASD04 **No of Credits: 3**

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

- Assess candidacy for bone anchored hearing devices, middle ear implants, cochlear implants, and ABI
- Select the appropriate device depending on the audiological and non-audiological findings
- handle post-implantation audiological management and assess the benefit derived from implantation, and counsel the parents/care givers during different stages of implantation

Unit I Implantable hearing devices – basics 9

- Need for implantable hearing devices
- History of implantable hearing devices (bone anchored hearing devices, middle ear implants, cochlear implants, auditory brainstem implants and midbrain implants)
- Candidacy for implantable hearing devices
- Team involved in implantable hearing devices
- Pre-implant counseling, Informed consent

Unit II Bone anchored hearing devices and middle ear implants 9

- Types, components
- Surgical approaches, risks, complications
- Audiological evaluations for candidacy, contraindications
- Assessment of benefits

Unit III Cochlear implant and brain stem implants – basics 9

- Terminology, types, components and features
- Bilateral, bimodal and hybrid cochlear implants
- Factors related to selection of the device, funding sources
- Surgical approaches, risks, complications
- Audiological and non-audiological candidacy criteria, contraindications

Unit IV Cochlear implants and brainstem implants 9

- Signal coding strategies, classification, types
- Intraoperative monitoring by audiologists
- Objective measures: ESRT, ECAP, prom stim, EABR, aided cortical potentials
- Post implant Mapping: schedule, pre-requisites, switch-on, mapping parameters, impedance, compliance, role of objective and subjective measures in mapping, post mapping audiological evaluation
- Assessment of benefits and Optimization of hearing aid on contra lateralear

Unit V Implantable hearing devices - Counselling and troubleshooting; Rehabilitation 9

- Post implant Counselling on care and maintenance and troubleshooting of the device

- Overview of post implant rehabilitation including AVT
- Factors affecting outcome of implantable devices in adults and children

PRACTICALS **15**

1. Watch videos of BAHA, middle ear implant, cochlear implant
2. Create hypothetical cases (at least 5 different cases) who are candidates for cochlear implantation. Make protocol for recording an EABR
3. List down the technological differences across different models of cochlear implants from different companies, their cost
4. Observation of mapping
5. Watching of videos on AVT
6. Watch video on cochlear implant surgery

Total Hours 60

Text Books:

1. Clark, G., Cowan, R. S. C., & Dowell, R. C. (1997). Cochlear Implantationfor Infants and Children: Advances. Singular Publishing Group.
2. Cooper, H., & Craddock, L. (2006). Cochlear Implants: A Practical Guide. Wiley.
3. Dutt, S. N. (2002). The Birmingham Bone Anchored Hearing Aid Programme: Some Audiological and Quality of Life Outcomes. Den Haag:Print Partners Ipskamp.
4. Eisenberg, L. S. (2009). Clinical Management of Children with Cochlear Implants. Plural Publishing.
5. Gifford, R. H. (2013). Cochlear Implant Patient Assessment: Evaluation of Candidacy, Performance, and Outcomes. Plural Publishing.
6. Hagr, A. (2007). BAHA: Bone-Anchored Hearing Aid. InternationalJournal of Health Sciences, 1(2), 265–276.
7. Kim C. S., Chang S. O., & Lim D. (Eds.). (1999). Updates in Cochlear Implantation the 2nd Congress of Asia Pacific Symposium on CochlearImplant and Related Sciences, Seoul, April 1999 (Vol. 57). Seoul: KARGER.
8. Kompis, M., & Caversaccio, M.-D (2011). Implantable Bone Conduction Hearing Aids. Karger Medical and Scientific Publishers.
9. Mankekar, G. (2014). Implantable Hearing Devices other than Cochlear Implants. Springer India.
10. Møller A.R. (2006). Cochlear and Brainstem Implants (Vol. 64).
11. Niparko, J. K. (2009). Cochlear Implants: Principles & Practices.Lippincott Williams & Wilkins.

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the history, need, candidacy for the implantable hearing aids.
2. Know Knowledge about the types, surgical methods and audiological evaluations in bone anchored hearing devices and middle implants
3. Obtain knowledge about the types, factors related to the selection, surgical procedures, and audiological evaluations for cochlear implants
4. Acquire knowledge about the signal coding strategies and objective measures after the surgery of cochlear implants and brainstem implants
5. Counsel and troubleshoot after the surgeries, to do the rehabilitation services and factors affecting the outcome

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Structural Anomalies and Speech Disorders

Semester V **Hours of Instruction/week: 4+1**

22BASC24 **No of Credits: 3**

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

- Understand the characteristics of disorders with structural anomalies including speech
- Evaluate and diagnose the speech characteristics seen in these disorders
- Learn about the techniques for the management of speech disorders in these conditions

Unit I Speech characteristics of persons with cleft lip and palate **12**

- Types, characteristics and classification of cleft lip and palate
- Causes of cleft lip and palate: genetic, syndrome and others
- Velopharyngeal inadequacy: types, causes and classification
- Associated problems in persons with cleft lip and palate: speech, language, feeding, dental and occlusion, hearing, psychological

Unit II Assessment and management of cleft lip and palate speech **12**

- Team of professionals in the management of persons with cleft lip and palate: their roles in diagnosis and management.
- Assessment of persons with cleft lip and palate for speech language functions: Subjective assessment of speech characteristics and speech intelligibility: profoma, tests, scales and others.
- Objective assessment of phonatory, resonatory and articulatory features Diagnosis and differential diagnosis of speech related functions
- Subjective assessment of language and communication functions
- Reporting test results using Universal Parameters
- Management of persons with cleft lip and palate
- Surgical and prosthetic management
- Techniques and strategies to correct speech sound disorders
- Techniques and strategies to improve feeding
- Counselling and guidance

Unit III Structural anomalies of tongue and mandible - Characteristics, assessment and management **12**

- Types, classification and characteristics of structural anomalies of tongue and mandible
- Causes for structural anomalies of tongue and mandible
- Team of professionals in the management of persons with structural anomalies of tongue and mandible and their roles.
- Associated problems in persons with structural anomalies of tongue and mandible: Speech, Feeding, Dental and occlusion, Psychological and others
- Management of persons with structural anomalies of tongue and mandible Surgical and prosthetic management, Techniques and strategies to improve speech intelligibility, Techniques and strategies to improve feeding
- Counselling and guidance for persons with glossectomy and mandibulectomy

Unit IV Characteristics & assessment of laryngectomy **12**

- Causes, symptoms and classifications of laryngeal cancers

- Team of professionals in the management of persons with laryngeal cancer
- Surgery for laryngeal cancers: types and outcome
- Associated problems in layngectomee individuals
- Assessment of speech and communication skills of layngectomee individuals: Pre and post-operative considerations

Unit V Management of speech and communication in laryngectomies **12**

- Esophageal speech: candidacy, types of air intake procedures, speech characteristics and its modification through techniques and strategies, complications and contraindications.
- Tracheo-esophageal speech: candidacy, types of TEP, fitting of prosthesis, speech characteristics and its modification through techniques and strategies, complications and contraindications.
- Artificial larynx: types, factors for selection, output characteristics, techniques for efficient use of artificial larynx, complications and contraindications.
- Other remedial procedures: Pharyngeal speech, buccal speech, ASAI speech, gastric speech.

PRACTICALS **15**

1. Identify the different types of cleft lip and palate by looking at illustrations and images
2. Listen to 10 speech samples of children with cleft lip and palate and rate their nasality/ speech (articulation and cleft type errors) based on universal reporting parameters.
3. Identify the type of closure of Velopharyngeal port for 5 normal individuals and 5individuals with cleft lip and palate using videos of nasoendoscopy / videofluroscopy.
4. Perform oral peripheral mechanism examination on 10 individuals and document the structure and functions of the articulators.
5. Analyse the different types of occlusion in 10 individuals.
6. Identify the type of glossectomy by looking at pictures/illustrations.
7. Identify the different types of prosthesis in the management of head and neck cancer.
8. Analyse the speech profile of 5 individuals with laryngectomy.
9. Identify parts of an artificial larynx and explore its use.
10. Prepare a checklist / pamphlet illustrating care of the stoma and T- tubes invernacular.

Total Hours 75

Text Books:

1. Berkowitz. S. (2001). Cleft Lip and Palate: Perspectives in Management. Vol II. San Diego, London, Singular Publishing Group Inc.
2. Falzone, P., Jones. M. A., & Karnell. M. P. (2010). Cleft Palate Speech. IV Ed., Mosby Inc.
3. Ginette, P. (2014). Speech Therapy in Cleft Palate and Velopharyngeal Dysfunction. Guildford, J & R Press Ltd.
4. Karlind, M. & Leslie, G. (2009). Cleft Lip and Palate: Interdisciplinary Issues and Treatment. Texas, Pro Ed.
5. Kummer, A.W. (2014). Cleft Palate and Craniofacial Anomalies: The Effects on Speech and Resonance. Delmar, Cengage Learning.
6. Peterson-Falzone, S. J., Cardomone, J. T., &Karnell, M. P. (2006). The Clinician Guide to Treating Cleft Palate Speech. Mosby, Elsevier.

7. Salmon . J & Shriley (1999). A laryngeal speech rehabilitation for clinicians and by clinicians. Pro Ed
8. Yvonne, E (Ed) (1983). Laryngectomy: Diagnosis to rehabilitation. London: Croom Helm Ltd

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the types, Characteristics, cause and associated problems in cleft lip and palate
2. Acquire knowledge about team of professionals and subjective and objective measurements in cleft lip and palate.
3. Understand the types, Characteristics, cause and associated problems with structural anomalies of tongue and mandible.
4. Acquire knowledge about team of professionals, causes, symptoms and classification of laryngeal cancers.
5. To understand the laryngeal surgeries and management of speech and communication in laryngectomy

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Fluency and its Disorders

Semester V **Hours of Instruction/week: 4+1**

22BASC25 **No of Credits: 3**

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

- Understand the characteristics of fluency and its disorders
- Evaluate and diagnose fluency disorders
- Learn about the techniques for the management of fluency disorders

Unit I Fluency **12**

- Scope and definition of fluency
- Factors influencing fluency
- Definition and characteristics of features of suprasegmental in speech: rate of speech, intonation. rhythm, stress and pause
- Suprasegmental features in typical speech
- Suprasegmental features in the speech of persons with fluency disorders
- Developmental aspects of suprasegmental of speech
- Normal non-fluency

Unit II Stuttering and other fluency disorders **12**

- Stuttering: Definition and causes for stuttering
- Characteristics of stuttering: core and peripheral characteristics, primary and secondary stuttering, effect of adaptation and situation
- Development of stuttering
- Normal non fluency: characteristics and differential diagnosis
- Theories of stuttering: organic, functional, neurogenic, diagnosogenic and learning
- Cluttering: Definition, causes and characteristics
- Neurogenic stuttering: Definition, causes and characteristics

Unit III Assessment and differential diagnosis **12**

- Assessment of fluency disorders: stuttering, cluttering, neurogenic stuttering and normal non fluency:
- Subjective methods: protocols and tests
- Objective methods
- Qualitative and quantitative assessment
- Differential diagnosis of fluency disorders

Unit IV Management of stuttering **12**

- Approaches to management
- Changing scenario in management of stuttering
- Different techniques and strategies used in management with their rationale
- Relapse and recovery from stuttering
- Issues of speech naturalness in stuttering

Unit V Management of fluency-related entities **12**

- Management of cluttering: rationale, techniques and strategies
- Management of neurogenic stuttering: rationale, techniques and strategies
- Management of normal non-fluency: rationale, techniques and strategies
- Relapse and recovery in cluttering and neurogenic stuttering. Changes in normal non fluency
- Prevention and early identification of stuttering, and cluttering

PRACTICALS **15**

1. Assess the rate of speech in 5 normal adults.
2. Record and analyse the supra segmental features in typically developing children between 2 and 5 years.
3. Record audio visual sample of 5 typically developing children and 5 adult's for fluency analysis.
4. Listen/see samples of normal non fluency and stuttering in children and document the differences.
5. Identify the types of dysfluencies in the recorded samples of adults with stuttering.
6. Instruct and demonstrate the following techniques: Airflow, prolongation, easy onset shadowing techniques.
7. Record 5 speech samples with various delays in auditory feedback and analyse the differences.
8. Administer SPI on 5 typically developing children.
9. Administer SSI on 5 adults with normal fluency.
10. Administer self-rating scale on 10 adults with normal fluency.

Total Hours 75

Text Books:

1. Assessment and management of fluency disorders. Proceedings of the national workshop on "Assessment and management of fluency disorders", 25-26 Oct 2007.All India Institute of Speech & Hearing, Mysore. 2007.
2. Bloodstein, O., & Ratner, N. B. (2008). A Handbook on Stuttering (6th Ed.).CliftonPark, NY, Thomson Demer Learning.
3. Guitar, B. (2014). Stuttering-An Integrated Approach to its Nature and Treatment.4th Ed. Baltimore, Lippincott Williams & Wilkins.
4. Hegde, M. N. (2007). Treatment Protocols for Stuttering.CA Plural Publishing.
5. Howell, P. (2011). Recovery from Stuttering. New York, Psychology Press.
6. Packman, A., & Attanasio, J.S. (2004). Theoretical Issues in Stuttering. NY, Psychology Press.
7. Rentschler, G. J. (2012). Here`s How to Do: Stuttering Therapy. San Diego, Plural Publishing
8. Wall, M. J., & Myers F. L. (1995). Clinical Management of Childhood Stuttering. Texas, PRO-ED, Inc.
9. Ward, D. (2006). Stuttering and Cluttering: Frameworks for Understanding &Treatment. NY, Psychology Press.
10. Yairi, E., & Seery, C. H. (2015). Stuttering - Foundations and Clinical Applications.2nd Ed. USA, Pearson Education, In.

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the characteristics of fluency and factors affecting it
2. Understand the concept of stuttering, development, causes and theories of stuttering
3. Differentiate stuttering and other fluency related disorders
4. To treat stuttering with appropriate approaches and techniques
5. To give therapy for different fluency related disorders.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Paediatric Audiology

Semester V **Hours of Instruction/week: 4+1**

22BASC26 **No of Credits: 3**

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

- Describe auditory development and list etiologies and relate them to different types of auditory disorders that may arise
- Explain different hearing screening/identification procedures and their application
- Elaborate on different aspects of paediatric behavioral and physiological /electrophysiological evaluation

Unit I Auditory development **12**

- Review of Embryology of the ear
- Development of auditory system from periphery to cortex
- Neuroplasticity
- Prenatal hearing
- Normal auditory development from 0-2 years
- Infant speech perception
- Incidence and prevalence of auditory disorders in children

Unit II Auditory disorders **12**

- Congenital and acquired hearing loss in children
- Permanent minimal and mild bilateral hearing loss
- Impact on auditory skills, speech-language, educational and socio-emotional abilities
- Moderate to profound sensorineural hearing loss
- Unilateral hearing loss
- Auditory Neuropathy Spectrum Disorders
- Central auditory processing disorders
- Pseudohypacusis
- Auditory disorders in special population and multiple handicap

Unit III Early identification of hearing loss **12**

- Principles of early hearing detection and intervention programs
- Principles and history of hearing screening
- Joint Committee on Infant Hearing position statement (2000, 2007,2013)
- High risk register/ checklists for screening
- Sensitivity and specificity of screening tests
- Hearing screening in infants and toddlers: Indian and Global context
- Hearing screening in preschool children: Indian and Global context
- Hearing screening in school-age children (including screening for CAPD): Indian and Global context

Unit IV Paediatric assessment I **12**

- Behavioral observation audiometry
- Conditioned orientation reflex audiometry
- Visual reinforcement audiometry, TROCA, play audiometry
- Pure tone audiometry in children: Test stimuli, response requirement and reinforcement

- Speech audiometry (SRT, SDT); Speech recognition and speech perception tests developed in India)
- Bone conduction speech audiometry
- Immittance evaluation in paediatric population
- Central auditory processing disorders assessment

Unit V Paediatric assessment II **12**

- Recording and interpretation of OAE in paediatric population
- Factors affecting OAE in paediatric population
- Recording and interpretation of click evoked and tone burst evoked ABR in paediatric population
- Factors affecting ABR in paediatric population
- Recording ASSR in paediatric population
- Recording AMLR, ALLR in paediatric population
- Assessment of hearing loss in special population
- Diagnostic test battery for different age groups
- Diagnosis and differential diagnosis

PRACTICALS **15**

1. Observe a child with normal hearing (0-2 years) in natural settings. Write a report on his/her responses to sound.
2. Observe a child with hearing impairment (0-2 years) in natural settings. Write a report on his/her responses to sound with and without his amplification device
3. Administer HRR on at least 3 newborns and interpret responses
4. Based on the case history, reflect on the possible etiology, type and degree of hearing loss the child may have.
5. Compare ABR wave forms in children of varying ages from birth to 24 months.
6. Observe live or video of BOA/VRA of a child with normal hearing and hearing loss and write a report on the instrumentation, instructions, and stimuli used, procedure and interpretation.
7. Observe OAE in a child with normal hearing and a child with hearing loss. Write a report on the instrumentation, protocol used and interpretation
8. Observe ABR in a child with normal hearing and a child with hearing loss. Write down a report on the instrumentation, protocol used and interpretation
9. Observe immittance evaluation in a child with normal hearing and a child with hearing loss. Write a report on the instrumentation, protocol used and interpretation
10. Using role play demonstrate how the results of audiological assessment are explained to caregiver in children with the following conditions
11. Child referred in screening and has high risk factors in his history
12. Child with chronic middle ear disease
13. Child with CAPD
14. Child with severe bilateral hearing impairment

Total Hours 75

Text Books:

1. Chan, Y. and Goddard, J.C. (2015). K J Lee's Essential otolaryngology: head and neck surgery. (11th edition). New Delhi: Atlantic Publisher and Distributers

2. Dhingra, P. L. (2013). Diseases of Ear, Nose and Throat (Sixth edition). Elsevier.
3. O'Neill, J.P. and Shah, J.P. (2016). Self-assessment in otolaryngology. Amsterdam: Elsevier
4. Postic, W.P., Cotton, R.T., Handler, S.D. (1997). Ear trauma. Surgical Pediatric Otolaryngology. New York: Thieme Medical Publisher Inc.
5. Wackym, A. and Snow, J.B. (2015). Ballenger's otorhinolaryngology head and neck surgery. (18th edition). United States: McGraw-Hill Medical

Course outcomes: On the successful completion of the course, students will be able to

1. Understand the auditory development from the embryo till 2 years of child
2. Know about the auditory disorders both congenital and acquired
3. Know about hearing screening and early identification of hearing loss
4. To know about behavioral and objective assessment of auditory system for children
5. To know about electrophysiological assessment of children and test battery for all age groups

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Aural Rehabilitation in Children

Semester V **Hours of Instruction/week: 4+1**

22BASC27 **No of Credits: 3**

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

- Describe the different communication options available for young children with hearing impairment
- Explain the impact of hearing impairment on auditory development and spoken language communication
- Enumerate how the needs of individuals with hearing impairment using sign language and spoken language as form of communication in India are being met

Unit I Auditory development, spoken communication and acoustic accessibility **12**

- Sensitivity period for auditory development
- Impact of hearing impairment on auditory development, spoken language acquisition, parent child communication
- Factors affecting auditory development
- Hearing loss implications for speech perception: acoustics of speech
- Optimizing hearing potential through hearing aids
- Optimizing hearing potential through cochlear implants
- Barriers to acoustic accessibility: distance, signal to noise ratio, reverberation
- Managing the listening environment for infants, toddlers' schools
- Signal to noise ratio enhancing technologies personal FM, loop systems, desktop group systems, blue tooth connectivity

Unit II Communication options **12**

- Detecting and confirming hearing loss
- Parent support counselling, individual family service plan
- Choosing communication options
- Auditory oral approach, Auditory verbal therapy
- Manual/sign language: Indian and Global context
- Cued speech and total communication
- Listening devices hearing aid/cochlear implant
- Early intervention programs

Unit III Optimal listening and learning environments infancy and early childhood **12**

- Involvement of family, Factors impacting family involvement, supporting families through information and education
- Creating optimum listening and learning environment
- Intervention: Assessment, auditory learning, listening and language facilitation techniques in infancy and early childhood
- Issues with children with mild hearing loss, unilateral hearing loss,
- Children with hearing loss, ANSD or APD: Children are intervened late
- Children with hearing loss and other special needs

- Listening and spoken language in school age: benefits of inclusion, Intervention at school age: Functional hearing assessment, communication assessment and intervention to integrate with academic targets

Unit IV Auditory - speech reading training and literacy 12

- Candidacy for auditory training and speech reading
- Auditory training/learning four design principles skill, stimuli, activity, and difficulty level
- Early training Objectives
- Analytic and Synthetic training Objectives
- Formal and informal training
- Auditory training for infants and very young children
- Outcomes of training
- Speech and language and literacy characteristics
- Speech language and literacy evaluation assessment
- Speech language therapy

Unit V Indian perspectives 12

- Prevalence of hearing impairment in children
- Education of the deaf in India historical perspectives
- Available resources for education of the hearing impaired
- Early intervention programs and centers
- Schools for the hearing impaired; day schools, residential schools
- Beyond school: college and vocational training
- Training manpower resources for service delivery
- Indian sign language
- Training sign language interpreters
- Cued speech in India
- Assessment and therapy tools developed for individuals with hearing impairment in India.

PRACTICALS 15

1. Watch documentaries such as "Sound and Fury" (2001). Write a reflection of why parents made communication choices for their children
2. Follow on links to the above film that shows the status of the children with hearing impairment after a few years.
3. Learn at least 50 signs across different categories of Indian sign language. Make a video of you signing 10 sentences. Have a class mate interpret them.
4. Interview a parent of a child with hearing impairment on how they adapted their child to wear the hearing aids and /or implant. What were the first responses to sound they observed and how language and speech develop?
5. Complete a functional auditory evaluation on one child with hearing loss. Do a speech and language evaluation and also write a report on the child strengths and weakness.
6. Design and demonstrate auditory learning activities at the four levels awareness, discrimination, identification and comprehension. Ensure that the activities encompass different skill level and difficulty levels.
7. Develop a short audio/film/pamphlet for parents in your local language on one of the following: teaching parent to trouble shooting the hearing aid/cochlear implant, establishing consistent use of listening device, activities to facilitate language across different age groups

8. Visit a school for the deaf. Document your observation about the acoustic environment in the class, strategies used by the teacher to promote listening and spoken language

Total Hours 75

Text Books:

1. Fitzpatrick, E.M., and Doucet S.P. (2013) (Eds). Paediatric Audiologic Rehabilitation. Thieme, New York
2. Hosford - Dumm, H., Roser, R., & Valente, M. (2007). Audiology Practice Management (2nd edition edition). New York: Thieme.
3. Mardell, J., & Flexer, C. (2013). Paediatric Audiology: Diagnosis, Technology, and Management (2nd Ed.). New York, NY: Thieme.
4. Rout, N and Rajendran, S. (2015). Hearing aid Counselling and Auditory training Manual, A publication of NIPMED, Chennai. Freely downloadable fromhttp://niepmd.tn.nic.in/publication.php. ISBN 978-81-928032-5-8.
5. Schwartz, S., (2007) Choices in Deafness : a Parent's guide to Communication Options , 3rd edition Woodbine house Bethesda
6. Status of Disability in India Hearing Impairment (2012) Rehabilitation Council of India, New Delhi
7. Tye-Murray, N., (2014) Foundations of Aural Rehabilitation: Children , adults and their family members 4th edition Plural Publishing San Diego

Course outcomes: On the successful completion of the course, students will be able to

1. To know auditory development and its sensitivity period and factors affecting it
2. To know about various communication options which are available hearing impaired
3. Know the learning environment for the HI and family members and factors affecting it
4. To choose the candidate for auditory training and speech language therapy for HI
5. Know about Indian perspectives regarding prevalence, education and early intervention, sign language for HI

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Practicals-IV (Speech -Language Pathology)

Semester V **Hours of Instruction/week: 6**

22BASC28 **No of Credits: 4**

Objectives:

- To Administer standardized tests for various disorders.
- To perform assessment and prepare report for voice, language, cleft lip and palate and fluency disorders.

Practicals:

- To administer at least two more (in addition to earlier semesters) standard tests for childhood language disorders.
- To record a speech sample for analysis of fluency skills (including blocks & its frequency, rate of speech, prosody, etc.).
- To assess posture and breathing for speech in children with motor speech disorders.
- To consult with inter-disciplinary medical/rehabilitation team and counsel the individual/family regarding management options and prognosis.
- Rating of cleft, speech intelligibility and nasality – minimum of 2 individuals with cleft lip and palate.
- Language assessment - minimum of 2 individuals with cleft lip and palate.
- Transcription of speech sample and assessment of percentage dis/dysfluency– minimum of 2 individuals with stuttering.
- Assessment of rate of speech on various speech tasks – at least on 2 children & adults.
- Voice assessment report - minimum of 2 individuals with voice disorders.
- Fluency assessment report - minimum of 2 individuals with fluency disorders.
- Oral peripheral examination on minimum of 2 individuals with cleft lip and palate.
- Apply speech language stimulation/therapy techniques on 5 children with language disorders/speech sound disorders/ motor speech disorders – minimum 5 sessions of therapy for each child.

Total hours-90 hours

Course outcomes: On the successful completion of the course, students will be able to

1. Administer standardized tests for various disorders.
2. Record and analyze samples of fluency, voice and language disorders.
3. Prepare voice and fluency assessment report.
4. Apply speech and language therapy techniques for clinical population.
5. Rate speech intelligibility nasality for cleft lip and palate.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Practicals-IV (Audiology)

Semester V
22BASC29

Hours of Instruction/week: 6
No of Credits: 4

Objectives:

- To Administer various protocols for tympanometry, reflexometry, OAE and ABR.
- To perform speech stimulation and auditory training techniques.

Practicals:

- Different protocols in tympanometry and reflexometry.
- Different protocols used in auditory brainstem responses
- Protocols for screening and diagnostic otoacoustic emissions
- Tests to assess vestibular system Different indications for selecting implantable hearing devices
- Various speech stimulation and auditory training techniques
- To administer auditory brainstem responses for the purpose of threshold estimation and sight of lesion testing
- To administer high frequency tympanometry and calculate resonance frequency
- To administer high risk register
- To modify the given environment to suit the needs of hearing impairment
- Analysis of ABR waveforms – threshold estimation 5 and site of lesion 5 Analysis of Immittance audiometry and relating to other tests – 5 individuals with conductive and 5 individuals with sensori-neural hearing loss
- How to formulate select appropriate auditory training technique based on audiological evaluation
- Threshold estimation on 5 infants (< 2 years) TEOAE and DPOAE on 5 infants (< 3 years) 2 children (3-6 years)
- Listening age of 3 children with hearing impairment Appropriate auditory training on 5 children with hearing loss.

Total hours-90 hours

Course outcomes: On the successful completion of the course, students will be able to

1. Administer different protocols of tympanometry, reflexometry, OAE and ABR.
2. Asses vestibular system.
3. Formulate speech stimulation and auditory training techniques.
4. Know to modify environment to suit needs of hearing impaired.
5. Perform threshold estimation and give appropriate auditory training.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Audiological and Speech Management (Self Study)

Semester V **Hours of Instruction/week: 1**

22BASC30 **No. of Credits: 4**

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

- To Know the Management Techniques in Audiology and Speech Language pathology
- To Know about the benefits and schemes provided by the Government and NGO to the Persons with Disability
- To learn about the Team approach and importance of counselling

Unit I Audiological Management **3**

- Audiological screening
- Protocols for Screening
- CAPD
- Aural rehabilitation
- Vestibular rehabilitation

Unit II Speech Management **3**

- ABA
- Floor time, Play Therapy
- Smile Train
- AAC
- Hanen approach, TEACCH, PROMPT

Unit III Government Schemes and Policies **3**

- ADIP
- SSA
- DEIC
- NPPCD
- Other State and National Schemes

Unit IV Multidisplinary approach **3**

- Team members
- Their role in management
- Importance of Multidisciplinary approach
- Outcome of multidisciplinary approach
- CBR

Unit V Counselling **3**

- Meaning
- Nature & Scope of counselling
- Principles and goals of counselling
- Types and Techniques: Individual and Group counselling
- Applications of counselling

Total Hours **15**

Recommended Books:

1. Fitzpatrick, E.M., and Doucet S.P. (2013) (Eds). Paediatric Audiologic Rehabilitation. Thieme, New York
2. Hosford - Dumm, H., Roser, R., & Valente, M. (2007). Audiology Practice Management (2nd edition edition). New York: Thieme.
3. Mardell, J., & Flexer, C. (2013). Paediatric Audiology: Diagnosis, Technology, and Management (2nd Ed.). New York, NY: Thieme.
4. Rout, N and Rajendran, S. (2015). Hearing aid Counselling and Auditorytraining Manual, A publication of NIPMED, Chennai. Freely downloadable fromhttp://niepmd.tn.nic.in/publication.php. ISBN 978-81-928032-5-8.

Course Outcome:

CO1: To gain Knowledge about the management techniques in audiology
CO2: To gain Knowledge about the other management techniques in Speech
CO3: To know about the Schemes and policies provided by the government
CO4: To gain Knowledge about the multidisciplinary management
CO5: To gain Knowledge about the Counselling and their applications

CO /PO	PO 1	PO2	PO 3	PO 4	PO 5	PO6	PO 7	PO8	PO9	PO 10	PO 11	PSO1	PSO2	PSO3
CO1	H		L	L	L	L	L	M				H	M	M
CO2	H	M	H	M	M	H	M	H	M		M	H	H	M
CO3	H		H		H	H		H	L	M	L	H	H	L
CO4	H	L	H	H	H	H	M	H	L			H	H	M
CO5	M	M	H	H	H	H	H	H	L			H	H	M

Motor Speech Disorders in Adults

Semester VI **Hours of Instruction/week: 4+1**

22BASC32 **No of Credits: 3**

Objectives:

- To understand the characteristics of acquired motor speech disorders in adults
- To evaluate and diagnose speech characteristics in acquired motor speech disorders
- To learn about the techniques for the management of speech and related errors in acquired motor speech disorders

Unit I: Causes & Characteristics of dysarthria 12

- Definition, etiology and classification of acquired dysarthria
- General, speech and feeding related characteristics of acquired dysarthria with and without genetic underpinnings:
- Vascular lesions: dysarthria following stroke/CVA, cranial and peripheral nerve palsies
- Infectious condition of the nervous system: dysarthria following meningitis, encephalitis, polyneuritis, poliomyelitis, neurosyphilis.
- Traumatic lesions: Dysarthria following TBI.
- Toxic conditions of the nervous system: Dysarthria following exogenic and endogenic toxic conditions of the nervous system.
- Anoxia of the nervous system: Dysarthria following anoxic conditions Metabolic disorders affecting nervous system: Dysarthria following metabolic conditions that affect the nervous system, Wilson's disease etc.
- Idiopathic causes: Dysarthria following idiopathic causes
- Neoplastic lesions of nervous system: Dysarthria following neoplastic lesions in the nervous system
- Demyelinating and degenerative conditions: Huntington's Chorea, Parkinson's, Multiple Sclerosis, Motor Neuron Diseases

Unit II: Assessment and diagnosis of dysarthria 12

- Subjective assessment of dysarthria:
- Assessment of respiratory, phonatory, resonatory, articulatory errors Assessment of prosodic features
- Assessment of speech intelligibility
- Scales, protocols and tests used for subjective assessment of dysarthria Instrumental analysis of speech in dysarthria: Acoustic, kinematic and physiological Advantages and disadvantages of subjective and instrumental procedures in the assessment of dysarthria in adults
- Differential diagnosis of acquired motor speech disorders in adults: Dysarthria and verbal apraxia, Dysarthria and functional articulation disorders Dysarthria and aphasia, Apraxia of speech and aphasia, Dysarthria from other allied disorders such as agnosia, alexia, agraphia etc. Apraxia from other allied disorders such as agnosia, alexia, agraphia etc.

- Assessment of feeding, swallowing and related issues in persons with dysarthria

Unit III: Management of dysarthria 12

- Management of acquired dysarthria
- General principles in the management of dysarthria
- Influence of medical, prosthetic and surgical procedures on the speech in persons with acquired dysarthria.
- Facilitative approach: vegetative, sensorimotor and reflex based.
- Systems approach: correction of respiratory, phonatory, resonatory, articulatory and prosodic errors.
- Strategies to improve speech intelligibility and speech enhancement techniques Strategies to improve feeding, swallowing behavior in persons with acquired dysarthria

Unit IV: Assessment and management of apraxia in adults 12

- Definition, etiology and classification of acquired apraxia Characteristics of nonverbal apraxia's in adults Characteristics of verbal apraxia's in adults
- Subjective assessment strategies: standard tests and scales, protocols and behavioral profiles
- Instrumental analysis of the speech of apraxia in adults: Acoustic, Kinematic and Physiological
- Management Approaches for verbal & nonverbal apraxia: principles and strategies

Unit V: Management related issues in motor speech disorders 12

- Team involved in the management of persons with acquired dysarthria and apraxia
- Issues related to maintenance and generalization of speech in dysarthria and apraxia
- Counselling and guidance for persons with acquired dysarthria and apraxia
- Augmentative and alternative strategies for persons with acquired dysarthria and apraxia

PRACTICALS 15

- Identify the cranial nerves and mention its origin and insertion from a picture/ model. Demonstrate methods to assess the cranial nerves Assess the respiratory system using speech and non-speech tasks in 10 healthy adults.
- Assess the phonatory system using subjective and acoustic analysis in 10 healthy adults.
- Looking at a video identify the clinical signs and symptoms of different neurological conditions resulting in Dysarthria.
- Record the speech sample of 5 normal adults and compare with the audio sample of individuals with Dysarthria.
- Administer Duffy's intelligibility rating scale on 5 healthy adults. Administer Frenchay's Dysarthria Assessment on 5 healthy adults. Demonstrate activities to improve the functions of speech subsystem. Identify the signs of UMN and LMN based on a video.
- Prepare a low tech AAC for functional communication for an individual with apraxia.

Total Hours 75

Text Books:

1. Brookshire, R. H. (2007). Introduction to Neurogenic Communication Disorders. University of Virginia, Mosby.
2. Duffy, J. R. (2013). Motor Speech Disorders: Substrates, Differential Diagnosis, and Management (3rdEd.). University of Michigan, Elsevier Mosby.
3. Dworkin, P.J. (1991). Motor Speech Disorders: A Treatment Guide. St. Louis: Mosby.
4. Ferrand, C. T., & Bloom, R. L. (1997). Introduction to Organic and Neurogenic Disorders of Communication: Current Scope of Practice. US, Allyn & Bacon.
5. Goldenberg, G. (2013). Apraxia: The Cognitive Side of Motor Control. Oxford University Press, UK.
6. Lebrun, Y. (1997). From the Brain to the Mouth: Acquired Dysarthria and Dysfluency in Adults. Netherlands, Kluwer Academic Publishers.
7. Murdoch, B. E. (2010). Acquired Speech and Language Disorders: A Neuroanatomical and Functional Neurological Approach (2nd Ed.). New Delhi, India: John Wiley & Sons.
8. Papathanasiou, I. (2000) (Eds.). Acquired Neurogenic Communication Disorders – A Clinical Perspective, Chapters 5, 6 & 7.London, Whurr Publishers.
9. 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 Inc.

Course Outcome:

1. Understand the causes and characteristics of dysarthria
2. Gain knowledge about assessment and diagnosis of dysarthria
3. Students will know the management of dysarthria
4. Acquire knowledge on the assessment and management of apraxia in adults
5. Know about the management related issues in motor speech disorders

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Language Disorders in Adults

Semester VI **Hours of Instruction/week: 4+1**

22BASC33 **No of Credits: 3**

Objectives:

- To understand the characteristics of language in adults
- To evaluate and diagnose speech characteristics in adults with language disorders
- To learn about the techniques for the management of speech and related errors in language disorders seen in adults

Unit I: Neural bases of language **12**

- Correlates of language functions: Neuroanatomical Neurophysiological Neurobiological Cognitive
- Neurolinguistic models of language processing Connectionist models
- Hierarchical models Global models Process models Computational models, Language process in bi/multilingualism Language processing in right hemisphere

Unit II: Language disorders in adults **12**

- Definition, causes and characteristics of speech, language and cognition in Aphasia: cortical and subcortical
- Primary progressive aphasia Traumatic brain injury Right hemisphere damage Schizophasia
- Dementia
- Differential diagnosis of various language disorders seen in adults.

Unit III: Assessment and diagnosis of language disorders **12**

- Assessment of the following in aphasia, primary progressive aphasia, traumatic brain injury, right hemisphere damage, Schizophasia and dementia
- Linguistic behaviour including speech: scales, tests, protocols.
- Assessment of cognitive, social, behavioral characteristics Medical Investigation: Neuroimaging.

Unit IV: Management of language disorders **12**

- Medical, linguistic and programmed intervention for persons with Aphasia: cortical and subcortical
- Primary progressive aphasia Traumatic brain injury Right hemisphere damage Schizophasia, Dementia

Unit V: Rehabilitation issues relating to adult language disorders **12**

- Team involved in the rehabilitation of persons with adult language disorders Factors influencing the assessment and intervention for language in the context of bilingual and multilingual influences.
- Factors influencing the assessment and management of language in persons who are preliterate, illiterate and literate.
- Assessment of quality of life, Recovery patterns and prognosis in adults with language disorders Age related influence in adults with language disorders Counselling and guidance for adults with language disorders
- Generalization and maintenance issues in adults with language disorders Augmentative and alternative strategies for adults with language disorders

PRACTICALS **15**

1. Identify different lobes of in the brain by looking at a model/ image and label the language areas.
2. Administer a standardized test battery on 3 normal individuals to assess language and cognition.
3. Administer bilingual aphasia test on 3 healthy normal adults.
4. List the language characteristics in different types of aphasia from a video. Analyse the speech, linguistic and non-linguistic features seen in Right hemisphere damaged individual from a video.
5. In a given brain model mark the subcortical structures involved in language processing/ production.
6. Demonstrate various facilitatory and compensatory therapy techniques in the management of aphasia.
7. Formulate activities to assess linguistic abilities in dementia and aphasia. Counsel by a role play for a given profile of an individual with adult language disorder.
8. Prepare a counselling checklist /guideline that can be used with the family members of an individual with aphasia and traumatic brain injury.

Total Hours **75**

Text Books:

1. Chapey, R. (2008). Language Intervention strategies in aphasia and related neurogenic communication disorders.
2. Philadelphia: Lippincott Williams and Wilkins Davis, G. A. (2014). Aphasia and related Communication Disorders. Pearson Education Inc.
3. Edwards, S. (2005). Fluent Aphasia. Cambridge University Press.
4. Laine, M. & Martin, N. (2006). Anomia: Theoretical and Clinical Aspects. Psychology Press.
5. Lapointe, L. L. (2005). Aphasia and related neurogenic language disorders. (3rdEdn.). Thieme.
6. Lapointe, L. L., Murdoch, B. E., & Stierwalt, J. A. G. (2010). Brain based Communication Disorders. Plural Publishing Inc.
7. Stemmer, B., & Whitaker, H. A. (Eds.). (2008). Handbook of Neuroscience of Language. Elsevier.
8. Whitworth, A., Webster, J., & Howard, D. (2005). A cognitive neuropsychological approach to assessment and intervention in aphasia: A clinician's guide. Psychology Press.

Course Outcome:

1. Gain knowledge about the neural basis of language
2. Learn about the language disorders in adults
3. Understand the assessment and diagnosis of language disorders.
4. Analyze the management of language disorders
5. Acquire knowledge on the rehabilitation issues relating to adult language disorders

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Aural Rehabilitation in Adults

Semester VI **Hours of Instruction/week: 4+1**

22BASC34 **No of Credits: 3**

Objectives:

- To describe the impact on the quality of life of adults with hearing impairment
- Able to explain the principles benefits and limitations of auditory training and speech reading recognize factors that impair communication and suggest facilitative and repair strategies
- Administer different tools for assessment of hearing handicap, attitudes and beliefs that can impact aural rehabilitation

Unit I: Aural rehabilitation **12**

- Definition
- Scope of aural rehabilitation in adults
- Prevalence of hearing loss in children (global and Indian data) Prevalence of hearing loss in adults (global and Indian data)
- Relationship between audiometric data, hearing difficulties and amplification considerations
- Limitations of audiometric data
- Quality of life and impact on income, education, employment; Assessing communication handicap : interviews, questionnaires Vocational rehabilitation

Unit II: Listening training and speech reading for adults **12**

- Listening to speech with a hearing loss Candidacy for auditory training
- Listening training to improve speech perception
- Listening training to improve music perception Benefits of auditory training
- Speech reading for communication
- Characteristics of good lip readers versus good speech readers Factors affecting speech reading
- Assessing vision only auditory only processing Traditional methods of speech reading training

Unit III: Communication strategies **12**

- Factors that influence the reception of spoken message
- Facilitative communication strategies Repair strategies
- Repairing a communication breakdown
- Conversational styles
- Communication strategies training formal instruction, guided learning, real world practice

Unit IV: Aural rehabilitation for adults **12**

- Principles of aural rehabilitation in adults Psychological impact of hearing loss Support through counselling
- Orienting towards hearing aid use
- Needs assessment for non-hearing and assistive technology for adults Categories of assistive technology

- Aural rehabilitation programs: Individual vs group Components of aural rehabilitation program Process of aural rehabilitation :
- Communication under adverse listing conditions

Unit V: Aural rehabilitation for older adults **12**

- Influence of aging on the older adults: quality of life and psychological perspectives Influence of aging on the older adults: quality of life and social perspectives Auditory barriers to communication
- Non auditory barriers to communication Barriers to aural rehabilitation
- Factors influencing hearing aid use by the older adult
- Aural rehabilitation for different populations of older adult: independent and semi- independent older adult
- Aural rehabilitation for different populations of older adult: dependent older adult Aural rehabilitation in an old age home
- Hearing aid orientation

PRACTICALS **15**

- All scales and tools available in Hull R. H; Introduction to aural rehabilitation
- Listen to the speech recorded using hearing loss simulators (available on internet) and experience the sounds as heard by persons with different degrees of hearing loss. Write your observations on the same
- Simulate hearing loss by plugging ears and administer sentence tests of word recognition.
- Write a report on the performance
- Administer any three self-report questionnaires to three adults who have hearing loss and write a report of the relationship of their hearing loss to performance on the scale
- Administer any three self-report questionnaires to three older adults who have hearing loss and write a report of the relationship of their hearing loss to performance on the scale
- Administer any three self-report questionnaires to three adults who wear hearing aids and write a report of the relationship of their hearing loss to performance on the scale Administer the hearing belief questionnaire (Saunders, 2013) on an adult.
- Identify the positive and negative attitude and behavior that may impact the success of aural rehabilitation
- Design a session of aural rehab program (Objectives, activities, outcomes assessment) for adults recently fitted with cochlear implant, group of 4 older adults. Design an individualised program for an executive using a hearing aid for the first time, and an adult moving from an analog to a digital hearing aid
- Develop a pamphlet in your local language that would address any topic in aural rehabilitation

Total Hours 75

Text Books:

1. Hull, R. H., (2014) ed. Introduction to Aural Rehabilitation 2nd edition Plural Publishing, San Diego Chapters 1, 2, 11 to 20
2. Schow, R.L. & Nerbonne, M.A., (2012). Introduction to Audiologic Rehabilitation (6th edition), Allyn & Bacon, Boston.

3. Tye-Murray, N., (2014). Foundations of Aural Rehabilitation: Children , adults and their family members 4th edition Plural Publishing San Diego Chapters 5-10

Course Outcome:

1. Acquire knowledge about aural rehabilitation
2. Know about listening training and speech reading for adults
3. Gain knowledge on communicative strategies
4. Understand the aural rehabilitation of adults
5. Know about aural rehabilitation of older adults

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Audiology in Practice

Semester VI **Hours of Instruction/week: 4+1**

22BASC35 **No of Credits: 3**

Objectives:

- Able to list and describe the highlights of legislations relating to hearing impairment and other disabilities and incorporate ethical practices in professional service delivery.
- Provide information on welfare measures, policies of government when needed describe different strategies to create awareness of hearing impairment and programs to address them
- Explain the different clinical practice settings in audiology with reference to their requirement, protocols and role and responsibility of audiologist

Unit I: Scope, legislation and ethics in audiology **12**

- Scope of practice in audiology (National – ISHA & International body - AAA) Professional ethics (ISHA)
- Legislations and conventions relating to disability: need and historical aspects
- Classification of hearing impairment and disability certification, Rehabilitation Council of India Act (1992) and its amendments Person with Disability Act (1995)
- National Trust Act (1999) Right to Education (2012)
- Biwako Millennium framework (2003) and Salamanca Statement 1994 UNCRPD
- Concept of barrier free access and universal design relating to individuals with hearing impairment

Unit II: Hearing health and strategies for prevention of hearing impairment **12**

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

Unit III: Audiological practice in different settings **12**

- Audiological Private practice ENT clinics
- Paediatric / neonatology clinic/departments
- Neurology departments Factories and Industry
- Hearing aid dispensing center/hearing aid industry Rehabilitation centers such as DRC/CRCs Schools for the hearing impaired
- Cochlear implant clinics
- Multiple handicap habilitation center and others

Unit IV: Noise and hearing conservation in industry and community **12**

- Introduction to noise, types
- Sources of noise in the industry and community
- Effects of noise in the auditory system (outer, middle and inner ear)

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

Unit V: Scope and practice of tele-audiology **12**

- Introduction to tele-health: definition, history of tele-health Terminologies-tele-health, tele medicine, tele practice Connectivity: internet, satellite, mobile data
- Methods of tele-practice-store and forward and real time Ethics and Regulations for tele-audiology
- Requirements/Technology for tele- audiology: Web based platforms, Video conferencing, infrastructure
- Manpower at remote end and audiologist end, training assistants for tele-audiology Audiological screening using tele-technology : new born hearing screening, school screening, community screening, counselling
- Diagnostic audiological services using tele-technology: video otoscopy, pure tone audiometry, speech audiometry, oto acoustic emission, tympanometry, auditory brainstem response
- Intervention / aural rehabilitation using tele-technology: hearing aid counselling and troubleshooting, tinnitus, counselling, aural rehabilitation services, AVT, and counselling

PRACTICALS **15**

- Undertake the activities such as 'Dangerous decibel" program (www.dangerousdecibels.org)
- Noise measurement and attenuation measurement of ear protection devices.
- Sound level meter measurement in different areas (generator room, audio rooms) Speech in noise assessment for 10 subjects
- Visit an audiologist in different practice settings and provide a report Administer ICF protocols for patients with different disorders
- Explore websites of national institutes, hearing aid companied, NGOs in disability field and describe the accessibility features and information provided
- Remote control a PC based audiology equipment connected to internet using any authorized desktop sharing software
- Develop one pamphlet/poster/ in local language that would address some aspect of audiology practice
- Perform Accessibility ability of your institute/center and prepare a report

Total Hours 75

Text Books:

1. Audiology Telepractice; Editor in Chief, Catherine V. Palmer, Ph.D.; Guest Editor, Greg D. Givens, Ph.D. Seminars in Hearing, volume 26, number 1, 2005.

2. Bergland, B., Lindwall, T., Schwela, D.H., eds (1999). Guidelines on Community noise http://www.who.int/docstore/peh/noise/guidelines2.html WHO 1999
3. BIS specifications relating to Noise Measurements.- IS:7194-1973 Specification for assessment of noise exposure during work for hearing conservation purposes.
4. Census of India information on disability
5. Dobie, R. A (2001). Medical legal evaluation of hearing loss, 2nd Ed.
6. Hearing health and strategies for prevention of hearing impairment WHO (2001). International classification of Functioning, Disability and Health. Geneva: WHO http://www.asha.org/Practice-Portal/Professional-
7. Issues/Audiology-Assistants/ Teleaudiology-Clinical-Assistants/ http://www.asha.org/uploadedFiles/ModRegTelepractice.pdf
8. IS:10399-1982 Methods for measurement of noise emitted by Stationary vehicles IS:6229-1980 Method for measurement of real-ear
9. IS:9167-1979 Specification for ear protectors. 95
10. IS:9876-1981 Guide to the measurement of airborne acoustical noise and evaluation of its effects on man- IS:7970-1981 Specification for sound level meters.
11. IS:9989-1981 Assessment of noise with respect to community response.
12. John Ribera. Tele-Audiology in the United States. In Clinical Technologies: Concepts, Methodologies, Tools and Applications (pp. 693-702), 2011. Hershey, PA: Medical Information Science Reference. doi:10.4018/978-1-60960-561-2.ch305
13. Lipscomb, D. M. (1994). Hearing conservation – In industry, schools and the military.
14. Mandke, K and Oza R.K (2014). Private practice in speech pathology and audiology, 2014 ISHA
15. Philippe Valentin Giffard. Tele-Audiology. Tort, 2012. ISBN 6139256615, 9786139256617
16. Rawool, V. W. (2012). Hearing conservation in occupational, recreational, educational and home setting. Thieme: New York
17. RCI, PWD and National Trust, and Right to education act
18. Richard Wootton, John Craig, Victor Patterson, editors. Introduction to telemedicine. Second edition. London: The Royal Society of Medicine Press Ltd. 2006. p. 206 ISBN: 1 85315 677 9.
19. Salamanca statement and framework for action Scope of practice by RCI
20. Swanepoel de W, Hall JW 3rd .A systematic review of tele health applications in audiology. Telemed J E Health. 2010 Mar;16(2):181-200. doi: 10.1089/tmj.2009.0111.

Course Outcome:

1. Know about scope, legislations and ethics in audiology
2. Understand about the hearing health and strategies for prevention of hearing impairment
3. Gain knowledge about the audiological practice in different settings
4. Students will learn about the noise and hearing conservation in industry and community
5. Analyse the scope and practice of tele audiology

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1						H	M					H		
CO2	M	M	M		M	H	M	M				M	H	
CO3	H	M	H	M	H	M	M	M	M	M	M	M	M	H
CO4	H	M	M	M	M	L	L	L	H	L	H	H	M	M
CO5	M	M	H	H	M	H	H	H	L	M	M	M	M	H

Practicals-V (Speech-Language Pathology)

Semester VI **Hours of Instruction/week: 8**

22BASC36 **No of Credits: 4**

Objective:

- To understand the procedures to assess motor speech disorders, adult language disorders in adults.
- To perform dysphagia assessment, voice therapy, fluency therapy, bed side evaluation.

Practicals:

- Procedures to assess motor speech disorders in adults.
- Differential diagnosis of motor speech disorders in adults.
- Procedures to assess individuals with adult language disorders, and other related abnormalities.
- To administer at least two standard tests for adult language disorders.
- To administer at least two standard tests/protocols for motor speech disorders in adults.
- To record a sample for analysis of language and speech skills in adults with neuro-communication disorders.
- To assess posture, breathing, speech and swallowing in adults with motor speech disorders.
- To consult with inter-disciplinary medical/rehabilitation team and counsel the individual/family regarding management options and prognosis.
- Language assessment - minimum of 2 individuals after stroke.
- Associated problems in individuals after stroke and its evaluation.
  Dysphagia assessment – minimum of 2 children & adults.
- Goals and activities for therapy (including AAC) based on assessment/test results for adults with neuro-communication disorders.
- Voice therapy - Minimum of 2 individuals with voice disorders.
- Fluency therapy - Minimum of 2 individuals with fluency disorders.
- Bed side evaluation of individuals with neuro-communication disorders – Minimum of 2 individuals.
- Apply speech language stimulation/therapy techniques on 5 children with language disorders/speech sound disorders/ motor speech disorders – minimum 5 sessions of therapy for each child.

Total hours-120 hours

Course Outcome:

1. To understand the procedures to assess motor speech disorders and motor speech disorders in adults.
2. To administer standardized tests for adult language disorders, motor speech disorders.
3. To record and analyze speech and language skills in adults with neuro-communication disorders.

4. To consult with with inter-disciplinary medical/rehabilitation team and counsel the individual/family regarding management options and prognosis.
5. To perform voice therapy, fluency therapy and bed side evaluation.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Practicals-V (Audiology)

Semester VI **Hours of Instruction/week: 8**

22BASC37 **No of Credits: 4**

Objective:

- To be able to carry out noise survey, mapping of cochlear implant and trouble shooting.
- To perform AVT for child with hearing impairment and involve in auditory training.

Practiclas:

- National and international standards related to noise exposure.
- Recommend appropriate treatment options such as speech reading, AVT, combined approaches etc.
- To carryout noise survey in Industry and community
- To carryout mapping of cochlear implant in infants and children using both objective and subjective procedures
- To trouble shoot cochlear implant
- Analysis of objective responses like compound action potential, stapedial reflexes on at least 3 samples
- Comprehensive hearing conservation program for at least 1 situation
- AVT on at least 1 child with hearing impairment Trouble shooting and fine tuning of hearing aids on at least 5 geriatric clients
- At least one activity for different stages involved in auditory training

Total hours-120 hours

Course Outcome:

1. To understand and carry out noise survey.
2. To recommend appropriate treatment options like speech reading, AVT.
3. To carry out mapping of cochlear implants and trouble shooting.
4. To perform AVT and participate in auditory training.
5. To give comprehensive hearing conservation program.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Internship Project

Semester – VII **Hours of Instruction/Week: 6**
22BASC38 **Credit Points:4**

Objectives: To enable students to

1. Determine the purpose of the study with assumed outcomes
2. Initiate relevant intervention to meet the challenges on research
3. Validate the result outcomes with societal needs

Total Hours-90 hours

Course Learning Outcomes:

1. Describe the research process and the principle activities, skills and ethics associated with the research process
2. Practice select and define appropriate research problem and parameters
3. Compose a project proposal
4. Organize and conduct research using various interventions
5. Write a project report with good APA style for scholarly writing.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO 1			H	H		H		H					M	
CO 2			H		M			H			M		H	H
CO 3			H		H			H			M		M	
CO 4			H	H		H	H	H		M	M			M
CO 5			M	H	M				H		M	M	M	M

In-service training in Speech Language Pathology

Semester VII **Hours of Instruction/week: 15**

22BASC39 **No of Credits: 6**

Objective:

- To provide clinical exposure and experience in different set ups and to be able to carry out greater quantum of work with clinical populations and in different contexts.
- To provide greater opportunity to liaise with professionals from allied fields and to demonstrate competence and independence.

Practicals:

1. Diagnosis and management of speech, language disorders across life span.
2. Report evaluation findings, counsel and make appropriate referrals.
3. Plan and execute intervention and rehabilitation programs for persons with speech language.
4. Develop and maintain records related to persons with speech-language.
5. Engage in community related services such as camps, awareness programs specifically, and community based rehabilitation activities, in general.
6. Make appropriate referrals and liaise with professionals from related fields.
7. Gain experience in different set ups and be able to establish speech centres in different set-ups
8. Demonstrate that the objectives of the B.ASLP program have been achieved.
9. Advise on the welfare measures available for their clinical clientele and their families.
10. Advise and fit appropriate aids and devices for their clinical population

Total hours-225 hours

Course Outcome:

- To diagnose and manage of speech, language disorders across life span.
- To be able to plan, execute and report intervention and rehabilitation programs.
- To develop and maintain records.
- To make appropriate referrals and liaise with professionals from related fields.
- To advise and fit appropriate aids and devices for clinical population.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

In-service training in Audiology

Semester VII **Hours of Instruction/week: 15**

22BASC40 **No of Credits: 6**

Objective:

- To provide clinical exposure and experience in different set ups and to carry out greater quantum of work with varied clinical populations and in different contexts.
- To provide greater opportunity to liaise with professionals from allied fields.

Practicals:

- Diagnosis and management of hearing disorders across life span.
- Report evaluation findings, counsel and make appropriate referrals.
- Engage in community related services such as camps, awareness programs specifically, and community-based rehabilitation activities, in general.
- Make appropriate referrals and liaise with professionals from related fields.
- Gain experience in different set ups and be able to establish hearing centers in different set-ups
- Demonstrate that the objectives of the B.ASLP program have been achieved.
- Advise on the welfare measures available for their clinical clientele and their families.

Total hours-225 hours

Course Outcome:

- To diagnose and manage hearing disorders across life span.
- To report evaluation findings, counsel and make referrals.
- To engage in community related services and community-based rehabilitation.
- To liaise with professionals from related fields.
- To advise on welfare measures available for clinical population.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Internship Practicals-VI (Speech Language Pathology)

Semester VIII **Hours of Instruction/week: 18**

22BASC41 **No of Credits:10**

Objective:

- To provide clinical exposure and experience in different set ups and to carry out greater quantum of work with varied clinical populations and in different contexts.
- To provide greater opportunity to liaise with professionals from allied fields.

Practicals:

- Diagnosis and management of communication and swallowing disorders across life span.
- Report evaluation findings, counsel and make appropriate referrals.
- Plan and execute intervention and rehabilitation programs for persons with communication and swallowing
- Develop and maintain records related to persons with communication and swallowing.
- Engage in community related services such as camps, awareness programs specifically, and community-based rehabilitation activities, in general.
- Make appropriate referrals and liaise with professionals from related fields.
- Gain experience in different set ups and be able to establish speech centres in different set-ups
- Demonstrate that the objectives of the B.ASLP program have been achieved.
- Advise on the welfare measures available for their clinical clientele and their families.
- Advise and fit appropriate aids and devices for their clinical population.

Total hours:270 hours

Course Outcome:

1. To diagnose and manage communication and swallowing disorders.
2. To plan, execute, perform and report rehabilitation programs for clinical population.
3. To engage in community related services and community-based rehabilitation.
4. To liaise with professionals from related fields.
5. To advise on welfare measures available for clinical population.

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		

Internship Practicals-VI (Audiology)

Semester VIII **Hours of Instruction/week: 18**

22BASC42 **No of Credits: 10**

Objective:

- To provide clinical exposure and experience in different set ups and to carry out greater quantum of work with varied clinical populations and in different contexts.
- To provide greater opportunity to liaise with professionals from allied fields.

Praticals:

- Plan and execute intervention and rehabilitation programs for persons with hearing disorders
- Develop and maintain records related to persons with hearing disorders
- Engage in community related services such as camps, awareness programs specifically, and community-based rehabilitation activities, in general.
- Make appropriate referrals and liaise with professionals from related fields.
- Gain experience in different set ups and be able to establish hearing centres in different set-ups
- Demonstrate that the objectives of the B.ASLP program have been achieved.
- Advise on the welfare measures available for their clinical clientele and their families.
- Advise and fit appropriate aids and devices for their clinical population.

Total hours:270 hours

Course Outcome:

1. To plan, execute, perform and report rehabilitation programs for clinical population.
2. To develop and maintain records related to persons with hearing disorders.
3. To engage in community related services and community-based rehabilitation.
4. To liaise with professionals from related fields.
5. To advise on welfare measures available for clinical population

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PS O1	PS O2	PS O3
CO1	M		H	H	H	H	H	L	M		L	H		
CO2	M		H	H	H	H	H	L	M		L	H		
CO3	M		H	H	H	H	H	L	M		L	H		
CO4	M		H	H	H	H	H	L	M		L	H		
CO5	M		H	H	H	H	H	H	M		L	H		