Telephone No. 2419677/2419361
Fax: 0821-2419363/2419301

e-mail : registrar@uni-mysore.ac.in
www.uni-mysore.ac.in

UNIVERSITY OF MYSORE

Estd. 1916

VishwavidyanilayaKaryasoudha
Crawford Hall, Mysuru- 570 005

No.AC2(S)/151/2020-21

Dated:10.10.2022

Notification

Sub:- Syllabus and Examination Pattern of Speech & Hearing (UG) with effective from the Academic year 2022-23 as per NEP-2020.

Ref:- 1. Decision of Board of Studies in of Speech & Hearing (UG) Meeting held on 04-08-2022.
2. Decision of the Faculty of Science & Technology Meeting held on 15-09-2022.
3. Decision of the Academic Council meeting held on 23-09-2022.

*****

The Board of Studies in Speech & Hearing (UG) which met on 04-08-2022 has recommended & approved the syllabus and pattern of Examination of Speech & Hearing Course with effective from the Academic year 2022-23 as per NEP -2020.

The Faculty of Science & Technology and Academic Council at their meetings held on 15-09-2022 and 23-09-2022 respectively has also approved the above said syllabus and hence it is hereby notified.

The syllabus and Examination pattern is annexed herewith and the contents may be downloaded from the University Website i.e., www.uni-mysore.ac.in.

Draft Approved by the Registrar

10/10

Deputy Registrar(Academic)

University of Mysore
Mysore-570 005

To:-

1. All the Principal of affiliated Colleges of University of Mysore, Mysore.
2. The Registrar (Evaluation), University of Mysore, Mysuru.
3. The Chairman, BOS/DOS, in Speech & Hearing, Manasagangothri, Mysore.
4. The Dean, Faculty of Science & Technology, DoS in Earth Science, MGM.
5. The Director, Distance Education Programme, Moulya Bhavan, Manasagangotri, Mysuru.
6. The Director, PMEB, Manasagangothri, Mysore.
7. Director, College Development Council , Manasagangothri, Mysore.
8. The Deputy Registrar/Assistant Registrar/Superintendent, Administrative Branch and Examination Branch, University of Mysore, Mysuru.
9. The PA to Vice-Chancellor/ Registrar/ Registrar (Evaluation), University of Mysore, Mysuru.
10. Office Copy.

UNIVERSITY OF MYSORE

REGULATIONS AND SYLLABUS

BACHELOR OF AUDIOLOGY AND SPEECH-LANGUAGE PATHOLOGY

(B.ASLP)

MULTIDISCIPLINARY PROGRAMME AS PER NEP 2020

SYLLABUS W.E.F. THE ACADEMIC YEAR 2022-23

UNIVERSITY OF MYSORE

BACHELOR IN AUDIOLOGY AND SPEECH-LANGUAGE PATHOLOGY (**B.ASLP)**

DEGREE PROGRAMME STRUCTURE (CHOICE BASED CREDIT SYSTEM)

REGULATIONS - 2022

1.0 GENERAL REQUIREMENTS

1.1 Title and commencement:

These regulations shall be called the University of Mysore regulations for Choice Based Credit System (CBCS) and Continuous Assessment Grading Pattern (CAGP) as per NEP 2020 for Bachelor in Audiology and Speech-Language Pathology (B.ASLP) program. These Regulations shall come into force from the academic year **2022-23**.

1.2 Duration of the Program:

The B.ASLP program will be of 8 semesters with the last two semesters being internship. Each academic year will consist of two semesters, i.e. one odd and one even semester. A semester will extend over a period of 20 weeks inclusive of the semester and the examination.

1.3 Definitions

Course: Every course offered will have three components associated with the teaching-learning process of the course, namely:

a) Lecture - L
b) Tutorial- T
c) Practicum (Clinical) - P

where,

L stands for Lecture session.

T stands for Tutorial session consisting of the participatory discussion / self-study/ desk work/ brief seminar presentations by students and such other novel methods that make a student to absorb and assimilate more effectively the contents delivered in the Lecture classes.

P stands for Practicum (Clinical) which would involve hands-on experience involving persons with communication disorders in clinical and other setups such as hospitals/clinics/ outreach centers.

A course shall have either or all the above components.

A credit means the unit by which the course work is measured. The total credits earned by a student at the end of the semester upon successfully completing the course are L+T+P.The credit pattern of the course is indicated as L:T:P.

Different courses of study are labelled and defined as follows:

a) DSC: Discipline Specific Core Course;
b) AEC: Ability Enhancement Courses
c) AECC: Ability Enhancement Compulsory Course;
d) SEC: Skill Enhancement Course;
e) DSE: Discipline Specific Elective;
f) GE: Generic Elective.

Definitions

a. In the Choice Based Credit System – Continuous Assessment Grading Pattern (CBCS-CAGP), program means a degree and a subject means audiology and speech-language pathology.
b. DSC: Discipline specific core course, which should compulsorily be studied by a candidate.
c. AEC: These may be of two types:
    - AECC: Ability enhancement compulsory course based upon the content that leads to knowledge enhancement, viz. Environmental Science, Indian Constitution and English/Kannada/Communication skills.
    - SEC: Skill enhancement courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.
d. DSE: Discipline specific elective courses may be offered by the main discipline/subject of study or the University/Institute may also offer discipline related Elective courses of interdisciplinary nature (to be offered by main discipline/subject of study).
e. GE: An elective course chosen generally from an unrelated discipline/subject, with an intention to seek exposure beyond discipline/subject is called a Generic Elective.

2.0 Eligibility for admission

The Eligibility for Admission is as given in **Annexure - I**

3.0 Attendance

3.1 Each course/subjectshall be taken as a unit for calculating attendance and a candidate shall be considered to have put in the required attendance for the course, if he/she has attended not less than 80% in theory and 90% in clinical practicum for each course/subject.

3.2 A candidate who is having shortage of attendance in clinical practicum is permitted to make up this shortage by attending clinical work during vacation immediately after that

semester, before commencement of the next semester. The candidate is permitted to avail this facility in I, III and V semesters only, with prior permission from the Head of the Institution.

3.3 If a candidate represents his/her Institution/ University/ Karnataka State/ Nation in Sports/NCC/NSS/Extension program or any official activities, he/she is permitted to avail a maximum of 15 days in a semester, based on the recommendation and prior permission from the Head of the Institution. These 15 days can be availed by the student in addition to the regular leaves that the students can avail.

3.4 A candidate who does not satisfy the requirement of attendance shall not be eligible to take examination of the concerned course for that semester.

3.5 A candidate who fails to satisfy the requirement of attendance in a course may repeat that course when offered in the immediate subsequent year (this facility shall be available only for **two** times in the entire programme).

4.0 Medium of Instruction

The medium of instruction shall be English. Candidate shall write the examination in English language only.

5.0 Courses of Study

5.1 Courses of study shall be as those shown in the structure of B.ASLP program **Annexure-II.**

5.2 The minimum duration for the completion of B.ASLP program is eight semesters (including 2 semesters of internship). As per norms of the University of Mysore, a candidate shall complete the course within a maximum period of sixteen semesters counting from the first semester of the candidate

5.3 VII and VIII semesters taken together shall constitute the **internship year** during which time the candidates may be posted in any speech and hearing or related institutions including the parent institution. The duration of the internship shall be 10 months. The candidates shall abide by the Internship Programme Rules framed by the concerned institution from time to time.

5.4 A student must earn 182 credits for the successful completion of the B.ASLP program.

6.0 Change of Course

6.1 Once chosen, change of course is not permissible under any circumstances during that or subsequent semesters.

6.2 Lateral/multiple entry and multiple exits are not permitted, as it not allowed by Rehabilitation Council of India.

7.0 Appearance for the Examination

A candidate shall apply for one or all the courses of a semester when he/she wants to appear for the examination of that semester for the first time.

8.0 Scheme of Examination

A course of 3-6 credits shall be evaluated for 100 marks. A course of less than 3 credits shall be evaluated for 50 marks.

8.1 There shall be an examination at the end of each semester conducted by the University.

8.2 Duration of examination per theory course shall be 2 hours.

8.3 The first and the second components, C1 and C2, respectively, will be for 20% each. C1 must be completed by the 8^{th} week of the semester after completion of 50% of the syllabus. C2 will be based on remaining 50% of the syllabus and must be completed during 15^{th} week of the semester.

8.4 Every question paper of a theory course shall comprise of FOUR questions with internal choice covering the entire syllabus.

8.5 For a theory course carrying 60 marks, each question shall carry 15 marks each as shown in Annexure IIIa. For the theory course of 30 marks, two questions should carry 7 marks each and remaining two questions should carry 8 marks each as shown in Annexure IIIb.

8.6 In practical, the C_1 (20 marks) and C_2 (20 marks), student will be assessed for clinical skill, repertoire, planning for assessment & management, preparation & maintenance of clinical documents (test protocols, diary, lesson plans and progress report), Efficient use of time/skills in clinical work and Professional attitude/motivation/ aptitude for clinical work.

8.7 In practical, C_3(60 marks) will be based on clinical viva-voce. In **I to V and VII Semesters**, viva-voce shall be conducted by two **internal examiners consisting of *clinical staff/faculty***, who shall examine the clinical skills of students. In the VI and VIII **Semesters**, viva-voce will be conducted by one internal faculty and one external faculty

9.0 Question paper setting, Valuation, etc.:

As per University of Mysore UG-CBCS Regulations-2022.

10.0 Photo copy, Seeing, Retotaling and Revaluation

As per University of Mysore UG-CBCS Regulations-2022.

11.0 Classification of successful candidates

11.1 Passing Criterion: A student is considered to have passed the course, only on securing a minimum of 50% from C1, C2 and C3 put together. A student can take C3 exam irrespective of the marks scored in C1 and C2 for a course. In case a student secures less than 40% in C3 or absent for C3, the student is said to have not completed the course. The student shall complete the course by reappearing only for the C3 component for the course when University conducts the examination. The student carries the marks already awarded in C1 and C2.

11.2 Percentage to grade point: As per University of Mysore UG-CBCS Regulations-2022.

11.3 Class declaration: As per University of Mysore UG-CBCS Regulations-2022.

12. 0 Provision for Repeaters

As per University of Mysore UG-CBCS Regulations-2022.

13.0 Declaration of Rank

As per University of Mysore UG-CBCS Regulations-2022.

14.0 Marks Cards

As per University of Mysore UG-CBCS Regulations-2022.

15.0 Barring of Simultaneous Study

As per University of Mysore UG-CBCS NEP 2020 Regulations-2022.

16.0 Miscellaneous

16.1 These revised regulations will apply to candidates admitted for the academic year 2022-2023 and onwards for the Program mentioned in Regulation No.1.0 above.

16.2 Other regulations not specifically mentioned above shall be as per the Regulations of the University as applicable from time to time.

16.3 The University shall award the degree to successful candidates only after completion of internship.

Note: Any other issue not envisaged above, shall be resolved by the Vice Chancellor in consultation with the appropriate Bodies of the University, which shall be final and binding.

REGISTRAR **VICE CHANCELLOR**

Annexure – I

ELIGIBILITY FOR ADMISSION

Bachelor in Audiology and Speech-Language Pathology/ B.ASLP

1. Admission to Bachelor in Audiology and Speech-Language Pathology/B.ASLP is open to candidates who have passed the two-year pre-university examination conducted by the Pre-university Board of Education in the State of Karnataka or any other examination (10+2) considered as equivalent thereto by the University of Mysore.
2. Candidates who have obtained a minimum of 50% (45% in the case of SC/ST candidates) in the PCB group and combinations thereof, in their PUC or qualifying examination are eligible for admission.
3. The applicant/candidate should have studied Physics, Chemistry and Biology/ Mathematics/Computer Science/Statistics/Electronics/Psychology at 10+2 level shall be eligible for admission.
4. In case of a tie between candidates in the marks scored in PC-B/M/CS/S/E/P group and combinations thereof, a candidate who has studied Biology shall have priority for admission. If there is a tie among the biology candidates, then the aggregate marks of the qualifying examination shall be considered for selection.

REGISTRAR **VICE CHANCELLOR**

Annexure – II

B.ASLP DEGREE PROGRAM STRUCTURE (CHOICE BASED CREDIT SYSTEM)

1 credit L = 1 hour
1 credit T = 2 hour
1 credit P =3 hour

Sem No.	Course No.	DSC/ AECC/ SEC/ DSE/ GE	Title of the Course	Credits		Hours/ Week L:T:P = Total			
				Total	L:T:P		C1 and C2	C3	Total
1	2	3	4	5	6	7			
I	1.1	DSC	Communication Sciences-Speech & Language	3	3:0:0	3:0:0=3	20+20	60	100
	1.2	DSC	Communication Sciences – Audiology	3	3:0:0	3:0:0=3	20+20	60	100
	1.3	AECC	Anatomy, Physiology and Pathology related to Speech-Language & Hearing	3	3:0:0	3:0:0=3	20+20	60	100
	1.4	AECC	Clinical Psychology	2	2:0:0	2:0:0=2	10+10	30	50
	1.5	AECC	Electronics and Acoustics	3	3:0:0	3:0:0=3	20+20	60	100
	1.6	SEC	Clinicals (Speech-Language Pathology)	3	0:1:2	0:2:6=8	20+20	60	100
	1.7	SEC	Clinicals (Audiology)	3	0:1:2	0:2:6=8	20+20	60	100
	1.8	AECC	Indian Constitution	1	1:0:0	1:0:0=1	10+10	30	50
	1.9	AECC**	Language- 1	3	3:0:0	3:0:0=3	20+20	60	100
	1.10	OE**	Foundations of Anthropology/ Prenatal developmental and care	3	3:0:0	3:0:0=3	20+20	60	100
Total				**27**		**37**			
II	2.1	DSC	Speech-Language Pathology - Assessment & Management	3	3:0:0	3:0:0=3	20+20	60	100
	2.2	DSC	Audiological Evaluation	3	3:0:0	3:0:0=3	20+20	60	100
	2.3	AECC	Linguistics & Phonetics	3	3:0:0	3:0:0=3	20+20	60	100
	2.4	AECC	Otolaryngology	3	3:0:0	3:0:0=3	20+20	60	100
	2.5	AECC	Pediatrics & Genetics	2	2:0:0	2:0:0=2	10+10	30	50
	2.6	AECC**	Language – 2	3	3:0:0	3:0:0=3	20+20	60	100
	2.7	SEC	Clinicals (Speech-Language Pathology)	3	0:1:2	0:2:6=8	20+20	60	100
	2.8	SEC	Clinicals (Audiology)	3	0:1:2	0:2:6=8	20+20	60	100
	2.9	AECC	Environmental studies	1	1:0:0	1:0:0=1	10+10	30	50

	2.10	OE**	Psychology of Well being	3	3:0:0	3:0:0=3	20+20	60	100
Total				**27**		**37**			
III	3.1	DSC	Voice and its Disorders	4	4:0:0	4:0:0=4	20+20	60	100
	3.2	AECC	Speech Sound Disorders	4	4:0:0	4:0:0=4	20+20	60	100
	3.3	DSC	Diagnostic Audiology: Behavioral Tests	4	4:0:0	4:0:0=4	20+20	60	100
	3.4	AECC	Educational Audiology	4	4:0:0	4:0:0=4	20+20	60	100
	3.5	OE	Neurology	3	3:0:0	3:0:0=3	20+20	60	100
	3.6	SEC	Clinicals (Speech-Language Pathology)	3	0:1:2	0:2:6=8	20+20	60	100
	3.7	SEC	Clinicals (Audiology)	3	0:1:2	0:2:6=8	20+20	60	100
Total				**25**		**35**			
IV	4.1	AECC	Fluency and its Disorders	4	4:0:0	4:0:0=4	20+20	60	100
	4.2	DSC	Child Language Disorders	4	4:0:0	4:0:0=4	20+20	60	100
	4.3	DSC	Diagnostic Audiology: Physiological Tests	4	4:0:0	4:0:0=4	20+20	60	100
	4.4	AECC	Rehabilitative Audiology	4	4:0:0	4:0:0=4	20+20	60	100
	4.5	OE	Research Methods & Statistics	3	3:0:0	3:0:0=3	20+20	60	100
	4.6	SEC	Clinicals (Speech-Language Pathology)	3	0:1:2	0:2:6=8	20+20	60	100
	4.7	SEC	Clinicals (Audiology)	3	0:1:2	0:2:6=8	20+20	60	100
			Total		**25**	**35**			
V	5.1	DSC	Motor Speech Disorders in children	4	4:0:0	4:0:0=4	20+20	60	100
	5.2	AECC	Structural Anomalies and Speech Disorders	4	4:0:0	4:0:0=4	20+20	60	100
	5.3	DSC	Amplification Devices	4	4:0:0	4:0:0=4	20+20	60	100
	5.4	AECC	Pediatric Audiology	4	4:0:0	4:0:0=4	20+20	60	100
	5.5	SEC	Clinicals (Speech-Language Pathology)	3	0:1:2	0:2:6=8	20+20	60	100
	5.7	SEC	Clinicals (Audiology)	3	0:1:2	0:2:6=8	20+20	60	100
	5.5	OE	Sign Language/ Community Based Rehabilitation	3	3:0:0	3:0:0=3	20+20	60	100
			Total		**25**	**35**			

VI	6.1	AECC	Motor Speech Disorders in Adults	4	4:0:0	4:0:0=4	20+20	60	100
	6.2	DSC	Language Disorders in Adults	4	4:0:0	4:0:0=4	20+20	60	100
	6.3	AECC	Environmental Audiology	4	4:0:0	4:0:0=4	20+20	60	100
	6.4	DSC	Implantable Hearing Devices and Hearing Aid Fitting	4	4:0:0	4:0:0=4	20+20	60	100
	6.5	SEC	Clinicals (Speech-Language Pathology)	3	0:1:2	0:2:6=8	20+20	60	100
	6.6	SEC	Clinicals (Audiology)	3	0:1:2	0:2:6=8	20+20	60	100
	6.7	OE	Speech-Language Pathology and Audiology in Practice	3	3:0:0	3:0:0=3	20+20	60	100
			Total		**25**	**35**			
VII		SEC^	Internship: Speech-Language Pathology + Audiology (Internal)	14	0:2:12	0:4:36=40	20+20	60	100
VIII		SEC^	Internship: Speech-Language Pathology + Audiology (Internal + External)	14	0:2:12	0:4:36=40	20+20	60	100
			Grand Total		**182**				

** As per University of Mysore prescribed NEP syllabus

REGISTRAR **VICE CHANCELLOR**

Annexure-IIIa
SAMPLE QUESTION PAPER

Course Title: ……

Max. Marks: 60

Course Code……. Duration: 2 hrs.

Proposed Sample Question Paper			
Unit No.	**Question Number**	**Question/s**	**Marks**
I	1	xxxxxxxxxxxxxxxxxxx OR	15
	2	xxxxxxxxxxxxxxxxxxx	15
II	3	xxxxxxxxxxxxxxxxxxx OR	15
	4	xxxxxxxxxxxxxxxxxxx	15
III	5	xxxxxxxxxxxxxxxxxxx OR	15
	6	xxxxxxxxxxxxxxxxxxx	15
IV	7	xxxxxxxxxxxxxxxxxxx OR	15
	8	xxxxxxxxxxxxxxxxxxx	15

REGISTRAR **VICE CHANCELLOR**

Annexure-IIIb
SAMPLE QUESTION PAPER

Course Title: ……

Max. Marks: 30

Course Code……. Duration: 1 ½ hrs.

Proposed Sample Question Paper			
Unit No.	**Question Number**	**Question/s**	**Marks**
I	1	xxxxxxxxxxxxxxxxxxx OR	07
	2	xxxxxxxxxxxxxxxxxxx	07
II	3	xxxxxxxxxxxxxxxxxxx OR	08
	4	xxxxxxxxxxxxxxxxxxx	08
III	5	xxxxxxxxxxxxxxxxxxx OR	07
	6	xxxxxxxxxxxxxxxxxxx	07
IV	7	xxxxxxxxxxxxxxxxxxx OR	08
	8	xxxxxxxxxxxxxxxxxxx	08

REGISTRAR **VICE CHANCELLOR**

COURSE SPECIFIC SYLLABUS

SEMESTER I

Course: 1.1 Communication Sciences: Speech and Language

Objective

After completion of the course students shall have:

- Understanding of the relationship between Communication, Speech and Language
- Knowledge of physical, biological, social, psychological and linguistic bases of speech
- Understanding of normal speech and language development
- Understanding of causes related to speech and language disorders
- Knowledge of characteristics of speech and language disorders

Unit 1 **Basic Concepts in Speech, Language and Communication-12 Hrs**

1.1 Definitions of communication, speech, language and their components and functions
1.2 Distinctions and similarities between communication, speech and language
1.3 Basic models, levels and modes and functions of speech communication
1.4 Speech chain, biological foundations of speech and language including speech as an overlaid function.
1.5 Characteristics of speech- normal, clear and abnormal
1.6 Bases of speech – anatomical, physiological, neurological, physical, aerodynamic, linguistic, psychological and socio-cultural including genetic bases.

Unit 2 **Normal Developmental Aspects-12 Hrs**

2.1 Normal development of speech and language
2.2 Development of articulation
2.3 Development of voice
2.4 Development of fluency and prosody
2.5 Prerequisites for and factors affecting - speech and language development

Unit 3 **Basic Concepts Related to Incidence and Causative Factors-14 Hrs**

3.1 Definition: Speech –Language Pathology
3.2 History and development of profession of SLP including Indian context
3.3 Role of Speech-Language Pathologists in various settings
3.4 Causes of speech and language disorders
3.5 Basic epidemiologic concepts and principles and data sources and measurements
3.6 Population at risk for hearing loss and communication delay – at risk children, established risk children, high risk checklist.
3.7 Incidence and prevalence of Speech- language and hearing disorders as per different census (NSSO, WHO, different registry for various disorders etc)

Unit 4 **Introduction to Speech-Language and Swallowing Disorders: Classification and Characteristics-14 Hrs**

4.1 Voice disorders- based on Pitch, Loudness and Quality of voice
4.2 Phonological disorders - misarticulation, apraxia and dysarthria
4.3 Fluency disorders - stuttering, cluttering, neurogenic stuttering
4.4 Language disorders – aphasia in children and adults, cerebral palsy, specific language impairment, and hearing impairment, Autism spectrum disorders, Learning disability, Intellectual disability.
4.5 Feeding and swallowing disorders

Practicum

1. Demonstration of different types of wave forms – quasi-periodic, quasi-random, burst and silence
2. Listening to cassettes:
    a. How they hear
    b. Stress, rhythm and intonation
    c. Cardinal vowels
    d. IPA transcription
    e. Different speech disorders
    f. Speech development
3. Measurement of the following in 5 normal subjects:
    a. Habitual frequency
    b. Frequency range
    c. Optimum frequency
    d. Intensity
    e. Intensity range
    f. Rise time
    g. Fall time
    h. Vital capacity
    i. Mean airflow rate
    j. Phonation duration
4. Recording normal speech samples and analyze the recorded normal samplewith respect to:Phonological, morphological and syntactic development
5. Counting syllables in a standard passage
6. Production of various speech sounds and their identification
7. Listening to different pitch and their identification Submission of practical records
8. Oral mechanism examination 5 normal children and 5 normal adults
9. Oral mechanism examination on 2 children with structural oral deficits and 2 adults with structural or neurogenic disorders
10. Perceptual analysis of speech and language parameters in 2 normal children and 2 normal adults
11. Perceptual analysis of speech and language parameters in one sample from articulation, language, fluency and voice disorders
12. Analysis of speech and language behavior of population from diverse cultural background
13. Observation of diagnostics and therapy procedures
14. Report on the available clinical facilities and clinical activities of the institute
15. Prepare a chart and show the developmental stages for speech and language behavior
16. Report on the available audiovisual material in the clinics

References

Common

Fogle, P.T. (2013). Essentials of communication sciences & disorders, Delmar, Cengage learning.

Anderson, N.B., & Shames, G.H. (2011). Human communication disorders, Pearson Education Inc, New Jersy.

Justice, L.M., & Redle, E, E. (2014). Communication sciences and disorders- A clinical evidence based approach, Pearson education, Inc, USA.
Roeser, R. J., Pearson, D,W., & Tobey, E.E. (1998). Speech-Language pathology, Desk reference, Theme, New York.
Gunter, C.D., & Koenig, M.A. (2011). Communication development and disorders for partners in service, Plural publishing, San Diego.
Bordon, G J., Harris, K S., & Raphael, L J. (2006). Speech science primer: Physiology, acoustics, & perception of speech. Lippincott-Williams & Wilkins.
Speaks, C. E. (1999). Introduction To Sound: Acoustics for the Hearing and Speech Sciences (3 edition). San Diego: Cengage Learning.

Unit 1

Anderson, N.B., & Shames, G.H. (2011). Human communication disorders. Pearson education, Inc, New Jersy.
Fogle, P.T. (2013). Essentials of communication sciences & disorders, Delmar, Cengage learning.
Justice, L.M., & Redle, E, E. (2014). Communication sciences and disorders- A clinical evidence based approach, Pearson education, Inc, USA.
Roeser, R. J., Pearson, D,W., & Tobey, E.E. (1998). Speech-Language pathology desk reference, Theme, New York.
Gunter, C.D., & Koenig, M.A. (2011). Communication development and disorders for partners in service, Plural publishing, San Diego.
Roseberry-McKibbin., & Hegde, M. N. (2011). An advanced review of Speech-Language pathology, 3rd edition, Pro-ed, Inc, Texas.
Rathna, N. (1993). Speech and Hearing in last 30 years. A publication of ISHA.
Status of disability in India. (2012). A publication by RCI, Crossway communication pvt ltd, New Delhi.
Manual for training of PHC medical officers (2003). A publication by RCI, Grand print & process, New Delhi.
Anderson,N.B., & Shames, G.H. (2011). Human communication disorders. Pearson education, Inc, New Jersy.
Gunter, C.D., & Koenig, M.A. (2011). Communication development and disorders for partners in service, Plural publishing, San Diego
Angell, C.A. (2010). Language development and disorders: A case study approach, Jones & Bartlett publishers, LLC.

Unit 2

Anderson, N.B., & Shames, G.H. (2011). Human communication disorders. Pearson education, Inc, New Jersy.
Roseberry-McKibbin., & Hegde, M. N. (2011). An advanced review of Speech-Language pathology, 3rd edition, Pro-ed, Inc, Texas.
Justice, L.M., & Redle, E, E. (2014). Communication sciences and disorders- A clinical evidence based approach, Pearson education, Inc, USA.
Roeser, R. J., Pearson, D.W., & Tobey, E.E. (1998). Speech-Language pathology deskreference, Theme, New York.
Fogle, P.T. (2013). Essentials of communication sciences & disorders, Delmar, Cengage learning.
Justice, L.M., & Redle, E, E. (2014). Communication sciences and disorders- A clinical evidence based approach, Pearson education, Inc, USA.

Unit 3

Fogle, P.T. (2013). Essentials of communication sciences & disorders, Delmar, Cengage learning.
Justice, L.M., & Redle, E, E. (2014). Communication sciences and disorders- A clinical evidence based approach, Pearson education, Inc, USA.
Roseberry-McKibbin., & Hegde, M. N. (2011). An advanced review of Speech-Language pathology, 3rd edition, Pro-ed, Inc, Texas.

Roeser, R. J., Pearson, D.W., & Tobey, E.E. (1998). Speech-Language pathology desk reference, Theme, New York.
Fogle, P.T. (2013). Essentials of communication sciences & disorders, Delmar, Cengage learning.
Justice, L.M., & Redle, E, E. (2014). Communication sciences and disorders- A clinical evidence based approach, Pearson education, Inc, USA.

Unit 4

Shulman, G.H. et al. (1998).Human communication disorders – An introduction.3rdEdn.Allyn & Bacon, Boston.
Hegde, M.N. (1994).A course book on aphasia and other neurogenic language disorders. Singular publishing group, San Diego.
Angell, C.A. (2010). Language development and disorders: A case study approach, Jones & Bartlett publishers, LLC.
Roseberry-McKibbin., & Hegde, M. N. (2011). An advanced review of Speech-Language pathology, 3rd edition, Pro-ed, Inc, Texas.
Angell, C.A. (2010). Language development and disorders: A case study approach, Jones & Bartlett publishers, LLC.

Course: 1.2
Communication Sciences: Audiology

Objective

After studying the paper the students are expected to realize the following:

- Explain the origin of audiology
- Take case history and explain the importance of case history in clinical diagnosis
- Explain the physical properties of sound and its psychophysical correlates
- Explain the pathological conditions that would cause hearing loss
- Explain the usefulness of tuning fork tests in identification of different type of hearing loss.

Unit 1

Historical Aspects and Case History-14 Hrs

1.1 Historical aspects

- History of Audiology
- Medical and non-medical fields associated with audiology
- Development of Audiology in INDIA
- Branches of Audiology
- Scope of Audiology

1.2 Case history

- Need for the case history
- Essential factors to be included in the case history form
- Comparison of adults vs. children case history
- Usefulness of the case history

1.3 Early hearing tests

- Nature and properties of tuning fork
- Tuning fork tests: Qualitative tests – Rinne, Weber and Bing
- Quantitative test: Schwabach
- Interpretation, advantages and disadvantages
- Audiometric version of Weber and Bing test.
- Tuning fork tests findings in different degrees and type of hearing loss.

Unit 2

Concept of dB and Threshold Measurements 14 Hrs

2.1 dB concept

- Different aspects of the dB

- Power and pressure formulae, zero dB reference for pressure and power
- Calculation of dB values from absolute values and vice-versa
- Calculation of overall dB when two signals are superimposed, hearing level, sensation level
- Application of dB

2.2 Threshold concept

- Threshold of audibility
- MAP and MAF
- Threshold of pain
- Application of MAP and MAF

Unit 3 **Properties of Sound-12 Hrs**

3.1 Frequency: Concept – frequency, octave frequency, Psychophysical correlates, Factors affecting pitch

3.2 Intensity: Concept, Psychophysical correlates: Phons and sones – relation between phons and sones, use of phon and sone graph, computation of relative loudness of two given sounds using these graphs.

3.3 Duration: Basic concept

3.4 Differential sensitivity for intensity, frequency and duration.

Unit 4 **Causes of Hearing Loss-12Hrs**

4.1 Different types of hearing loss, general characteristics of conductive, mixed and sensorineural hearing loss

4.2 Classification of causes of hearing loss. Causes of hearing impairment: hereditary hearing loss, congenital hearing loss, acquired hearing loss in children and adults, causes of central auditory disorders.

Practicum

1. Otoscopy of individuals with normal hearing across age groups (Pediatric, adult and older adults) at least 5 in each group.
2. To familiarize with different types of audiometers.
3. To familiarize with different signals/stimuli used for audiometry
4. Generation of simple sine wave
   a. With different frequencies
   b. With different amplitudes
   c. With different phase
5. Administration and interpretation of tuning fork tests on individuals with normal hearing (5 Nos.)
6. Taking case history of 5 normal hearing individuals
7. Measurement of threshold of audibility in individuals with normal hearing using MAP and MAF (5 Nos.)
8. Measurement of DLI, DLF in individuals with normal hearing (5 Nos.) and generation of stimuli for DLI & DLF

References

Common

Martin, F. N., & Clark, J. G. (2014). Introduction to Audiology (12 edition). Boston: Pearson.

Gelfand, S. A. (2009). Hearing: An Introduction to Psychological and Physiological Acoustics (5 edition). London: CRC Press.

Zwicker E. Fastl H. "Psychoacoustics – Facts & Models" Springer – 1999

Palmer A.R. Rees A, Summerfield AQ Meddis K. Psychophysical and physiological advances in hearing – Whurr Publication 1998

Hanghton Piter "Acoustics for Audiologists" Academic Press 2002

Warren R.M 1999. Auditory Perception-A new Analysis and synthesis U

Rosenthal DF & Okiano H G "Computational Auditory Scene Analysis" Lawrence Erlbaun Associates, Publishers 1998.
Yost "Directional Hearing" – Wiley 2000

Course: 1.3

Anatomy, Physiology & Pathology of Communication Sciences & Disorders

Objective

After completion of the course students shall have the understanding of:

- Anatomy of speech, language and hearing mechanism
- Physiological system different systems in speech, language and hearing
- General pathological conditions causing speech, language and hearing disorders

Unit 1 **Anatomy and Physiology of Speech Systems-14 Hrs**

1.7 Preliminaries – The anatomical position, body planes, general anatomical terms, directions and locations, common anatomical terms

1.8 Overview of embryology of the speech mechanism

1.9 Respiratory system – anatomy of lower airway (trachea, lungs), physiology of breathing, volumes and capacities

1.10 Phonatory system – anatomy of larynx, vocal folds, physiology of larynx, voice production.

1.11 Resonatory and articulatory systems – anatomy of pharynx, oral cavity and nasal cavity, physiology of resonatory and articulary system – resonance and articulation.

Unit 2 **Anatomy and Physiology of Auditory System-14 Hrs**

2.1 Overview of embryology of the auditory mechanism

2.2 External ear – anatomy and physiology of the pinna, external auditory canal

2.3 Middle ear – anatomy of the tympanic membrane, ossicular chain, Eustachain tube, walls of the tympanic cavity, muscles, ligaments and tendons. Physiology – transformer action of the middle ear. Function of the middle ear muscles and Eustachian tube.

2.4 Inner ear – Anatomy – parts of the inner ear – bony labyrinth and membranous labyrinth, cochlea, semicircular canals, utricles, saccule. Physiology of the cochlea, cochlear microphonics, summating potential theories of hearing in brief, modes of bone conduction, physiology of the SSC, utricles and saccule.

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

2.6 Overview of blood supply for auditory system

Unit 3 **Anatomy and Physiology of Central Nervous System-12 Hrs**

3.1 Anatomy: parts of the brain (CNS, PNS), hemispheres, lobes,

3.2 Physiology: CNS and PNS, functions of different parts of the brain

3.3 Cranial Nerves, cranial nerves important for speech & hearing functions

3.4 Overview of blood supply for brain and spinal cord.

Unit 4 **General Pathology-12 Hrs**

4.1 Introduction to pathology - Normal cell, cell injury and cellular adaptations. etiology of cell injury, pathogenesis of cell injury, pigments, atrophy, hypertrophy, cellular aging.

4.2 Immune pathology - Inflammation and healing – components of immune system, diseases of immunity, inflammation - chemical mediators morphology, regeneration, factors influencing healing

4.3 Infections and parasitic diseases with reference to speech and hearing

systems. Environmental and nutritional diseases.

4.4 Diseases caused by bacteria, fungi and viruses, neoplasia, environmental pollution, chemical and drug injury, essential nutrients, disorders of vitamins, diet and cancer, mendelian disorders.

References

Common

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.

Zemlin, W. R. (2010). Speech and Hearing Science: Anatomy and Physiology: International Edition (4 edition.). Boston: Pearson.

Chaurasia, B.D (2004). Human Anatomy, vol 3. Head Neck and Brain 4 th Eds, CBS Publishers and Distributors, New Delhi.

Kelley, M., Wu, D., & Fay, R. R. (Eds.). (2005). Development of the Inner Ear (2005 edition.). New York: Springer.

Unit 1

Fuller, D. R., Pimentel, J. T., & Peregoy, B. M. (2012). Applied Anatomy and Physiology for Speech Language Pathology & Audiology. Lippincott Williams & Wilkins, Baltimore, MD

Jones, S. M., & Jones, T. A. (2011). Genetics, Embryology and Development of Auditory and Vestibular Systems. Plural Publishing, San Diego.

Seikel, J., King, D., & Drumright, D. (2015). Anatomy & Physiology for Speech, Language, and Hearing, V Edition. Cengage Learning

Zemlin, W. R. (1998). Speech and Hearing Science: Anatomy and Physiology. Allyn & Bacon, Needham Heights, Massachusetts

Fuller, D. R., Pimentel, J. T., & Peregoy, B. M. (2012). Applied Anatomy and Physiology for Speech Language Pathology & Audiology. Lippincott Williams & Wilkins, Baltimore, MD

Musiek, F. E., & Baran, J. A. (2007). The Auditory System: Anatomy, Physiology and Clinical Correlates. Pearson Education, Inc.

Plack, C. J. (2014). The sense of Hearing, II Edition. Psychology Press, New York

Unit 2

Culbertson, W. R., Cotton, S. S., & Tanner, D. C. (2006). Anatomy and Physiology Study Guide for Speech and Hearing. Plural Publishing, San Diego.

Fuller, D. R., Pimentel, J. T., & Peregoy, B. M. (2012). Applied Anatomy and Physiology for Speech Language Pathology & Audiology. Lippincott Williams & Wilkins, Baltimore, MD

Seikel, J., King, D., & Drumright, D. (2015). Anatomy & Physiology for Speech, Language, and Hearing, V Edition, Cengage Learning

Zemlin, W. R. (1998). Speech and Hearing Science: Anatomy and Physiology. Allyn & Bacon, Needham Heights, Massachusetts

Unit 3

Culbertson, W. R., Cotton, S. S., & Tanner, D. C. (2006). Anatomy and Physiology Study Guide for Speech and Hearing. Plural Publishing, San Diego.

Rouse, M. H. (2016). Neuroanatomy for Speech Language Pathology and Audiology. Jones & Bartlett Learning, LLC

Seikel, J., King, D., & Drumright, D. (2015). Anatomy & Physiology for Speech, Language, and Hearing, V Edition. Cengage Learning

Zemlin, W. R. (1998). Speech and Hearing Science: Anatomy and Physiology. Allyn & Bacon, Needham Heights, Massachusett

Unit 4 Fuller, D. R., Pimentel, J. T., & Peregoy, B. M. (2012). Applied Anatomy and Physiology for Speech Language Pathology & Audiology. Lippincott Williams & Wilkins, Baltimore, MD

Musiek, F. E., & Baran, J. A. (2007). The Auditory System: Anatomy, Physiology and Clinical Correlates. Pearson Education, Inc.

Plack, C. J. (2014). The Sense of Hearing, II Edition. Psychology Press, New York

Seikel, J., King, D., & Drumright, D. (2015). Anatomy & Physiology for Speech, Language, and Hearing, V Edition. Cengage Learning

Zemlin, W. R. (1998). Speech and Hearing Science: Anatomy and Physiology. Allyn & Bacon, Needham Heights, Massachusetts

Course 1.4 Clinical Psychology

Objective 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
- Basics of counselling

Unit 1 **Basic Concepts in Psychology-12 Hrs**

1.1 Introduction to psychology: Definition, history & schools of psychology
1.2 Scope of psychology
1.3 Meaning & definition of clinical psychology
1.4 Historical development, modern history of clinical psychology
1.5 Current status of clinical psychology
1.6 Scope as a specialty (clinical psychology) in health sciences
1.7 Role of clinical psychology in speech and hearing
1.8 Concept of normality
1.9 Concept of abnormality
1.10 Models of mental disorders: Biological, psychological and social models

Unit 2 **Clinical Methods-14 Hrs**

2.1 Methods in clinical psychology

- Case history
- Clinical interviewing
- Clinical observation
- Definition & types of psychological testing
- Assessment of cognitive functions
- Adaptive functions,
- Personality
- Behavioural assessment

2.2 Classification of abnormal behavior

- History, need & rationale of classification

2.3 Current classificatory systems:

- DSM
- ICD

Unit 3 **Developmental Psychology-12 Hrs**

3.1 Child & developmental psychology:
Meaning, definition & scope
- Meaning of growth, development & maturation
- Principles of child development

3.2 Motor development: general principals of motor development
- Stages in motor development: early motor development, motor development during later childhood and adolescence, decline with age

3.3 Cognitive development: growth from early childhood to adolescence
- Piaget's theory of cognitive development

3.4 Emotional development
3.5 Social development
3.6 Development of play behaviour

Unit 4 **Learning, Behaviour Modification and Counselling-14 Hrs**

4.1 Learning: Meaning, definition & characteristics
4.2 Theories of learning:
- Introduction
- Pavlov's classical conditioning: experiments & principles
- Skinner's operant conditioning: experiments & principles

4.3 Therapeutic techniques based on learning principles:
- Skill behavior techniques
- Problem behaviour techniques

4.4 Counselling: Introduction & definition
4.5 Types of counselling: Directive & non- directive
4.6 Characteristics of a good counsellor
4.7 Documentation in counselling and follow up methods

References

Common
Morgon C.T., King R.A., Robinson N.M. Introduction to Psychology. Tata McGraw Hill Publishing Co.
Anastasi, A. (1999). Psychological testing, London: Freeman
Baura, M (2004). Human Development and Psychlogy, Rehabiliation Council of India, New Delhi. ISBN: 81-7391-868-6
Coleman J.C. Abnormal Psychology and Modern Life, Taraporevala Sons & Co.
Gregory, R.J. (2000). Neuropsychological and geriatric assessment in Psychological Testing: History, Principles, and Applications (3rd ed.). New York: Allyn & Bacon.
Lezak, M., Loring, D.W., and Hannay, H.J. (2004). Neuropsychological Assessment. Fourth Edition. New York: Oxford University Press

Unit 1
Morgon C.T., King R.A., Robinson N.M. Introduction to Psychology. Tata McGraw Hill Publishing Co.
Coleman J.C. Abnormal Psychology and Modern Life, Taraporevala Sons & Co.
Sadock, B.J., & Sadock, V.A. (2000). Comprehensive text book of Psychiatry. New York: Lippinccott Williams & Wilkins.

Unit 2
Anastasi, A. (1999). Psychological testing, London: Freeman
Gelso, C.J. & Fretz, B.R. (1995). *Counseling Psychology*. New Delhi: A Prism Indian Edition.
Hansen, J.C., Stevic, R.R. & Warner, R.W. (1987). *Counseling*. Boston: Allyn & Bacon, Inc.,
Nelson-Jones, R. (1999). *Introduction to Counseling Skills*. London: Sage

Publications.
Palmer, S. (1999). *Introduction to Counseling and Psychotherapy*. London: Sage Publications.
Corey, G. (2011). Theory and practice of group counseling. 8th Edition. California: Brooks/Cole Publishing Company.
Corey, G. (2001a). *The art of integrative counseling.* Pacific Grove, CA: Brooks/Cole.
Corey, G. (2008). Theory and practice of counseling and psychotherapy. California: Brooks/Cole.
Corey, G., Corey, C., and Corey, M.S. (2008). Grups: Process and Practice. California: Brooks/Cole.
Handbook of counseling psychology by Woolfe and Dryden, Sage, New Delhi, 1996.
Improving treatment compliance: counseling and systems strategies for substance abuse and dual disorders, by Dennis C.Daley.
Jacobs, Ed. E., Masson, R.L. & Harvill, R.L. (1998). *Group Counseling: Strategies & Skills*. Pacific grove, CA: Books / Cole Pub. Co.,
Madden, G.R. (1998). *Legal Issues in Social Work: Counseling and Mental Heath*. Thousand Oaks: Sage Publications.
Intentional interviewing and counseling: facilitating client development in a multicultural society by Allen E.Ivey, Wadswoth Co. 1998.

Unit 3

Hurlock, E.B. (1981). Child development VI Ed. Mc Graw Hill International Book Co

Unit 4

Mazur (1994). Learning & Behavior. UK: Prentice – Hall International, Inc.
Bloom, F. & Lazeron, A. (1996). *Brain, mind, and behavior* (2nd ed.). New York: Freedman.
Kolb, B. & Whishaw, I.Q. (1996). *Fundamentals of human neuropsychology* (4th ed.). New York: Freeman Press.
Grant, I. & Adams, K. (1996). *Neuropsychological assessment of neuropsychiatric disorders*. New York: Oxford University Press.
Tuokko, H., and Hadjistavropoulos, T. (1998). An assessment and guide to geriatric neuropsychology. London: Lawrence Erlbaum.
Gregory, R.J. (2000). *Neuropsychological and geriatric assessment in Psychological Testing: History, Principles, and Applications* (3rd ed.). New York: Allyn & Bacon.
Caley, A. (1999). Assessment of Neuropsychological Functions in Psychiatric Disorders. New York: American Psychiatric Publishing.
Lezak, M., Loring, D.W., and Hannay, H.J. (2004). Neuropsychological Assessment. Fourth Edition. New York: Oxford University Press. .
Schoenberg, M.R. and Scott, J.G. (Eds.). (2011). The little black book of Neuropsychology: A Syndrome based Approach. New York: Springer-Verlag.
Sohlberg, M.M., and Mateer, C.A. (2001). Cognitive Rehabilitation: An Integrative Neuropsychological Approach. New York: The Guilford Press.

Course: 1.5 Electronics and Acoustics

Objective 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 1 **Introduction to Electronics & Signal Processing-14 Hrs**

1.1 Basic principle of operation and working of

- Resistors, variable resistor, capacitor inductor, semiconductor and diodes
- LEDs, seven segment displays, LCDs
- Introduction to signal processing
- Amplification concept of gain and bandwidth
- Frequency response

1.2 Power supply

- Block diagram of DC power supply, description and working of each block
- AC power supply & voltage stabilization and servo controlled method of stabilization
- UPS and Inverters
- Isolation transformer, AC power supply grounding

1.3 Fundamental of digital signal processing

- Binary number system, logic gates, flip flops and counters
- Analog signal & digital signal –Representation and comparison
- Converting analog signal to digital signal
- Basic structure of a digital processing system
- Converting digital signal to analog signal

1.4 Application of DSP

- Analog signal processing Vs digital signal processing – Comparison, merits and demerits
- Applications of DSP in communication sciences and disorder.

Unit 2 **Fundamental of Acoustics-12 Hrs**

2.1 Physics of Sound

- Nature and Propagation of sound
- Sound characteristics such as frequency, wave length , amplitude
- Pitch and Loudness-Sone, Phon, equal loudness contour
- Sound pressure level and Sound power level

2.2 Quality and properties of sound

- Time domain and frequency domain representation
- Acoustic Impedance

2.3 Acoustic Environment in closed rooms

- Reflection and absorption, reverberation
- Background noise, speech to noise ratio
- Techniques to reduce reverberation
- Acoustically treated rooms – Basic requirements, concept and structure.

2.4 Transducers , Sound Measurement, reproduction and recording

- Microphones-Piezoelectric, moving coil, condenser, electret etc

- Loudspeaker and their enclosures
- Digital recording & audiometric transducers reproduction
- Sound level meters & acoustic measurements

Unit 3 **Introduction to Information Technology-12 Hrs**

3.1 Introduction to computers

- SMPS, Hardware, Memory devices and types of storage media
- Specification of personal computers

3.2 Software

- Operating systems-Types, comparison and functioning
- Application software used in Communication Sciences and disorder
- Mobile Apps-concept & functioning

3.3 Structure and functioning of internet and intranet

- Concept of internet and world wide web
- Local Area Network – structure and components

3.4 Basic concept of Tele diagnosis & Tele rehabilitation

Unit 4 **Instrumentation in Speech, Language and Hearing-14 Hrs**

4.1 Introduction to electronic instrumentation

- Pre-amplifiers and Power amplifiers
- Filters-different types and their frequency response

4.2 Principle of operation, block diagram of

- Basic technology of analog and digital hearing aids
- Audiometers
- Immittance meters
- Group amplification and Assistive Listening Devices
- Speech spectrograph

4.3 Calibration of audiometers – Equipment, setup and procedure.

References

Common

Haughton, P., & Haughton, P. M. (2002). Acoustics for Audiologists (1st edition.).
San Diego, Calif: Emerald Group Publishing Limited.

Moser, P. (2015). Electronics and Instrumentation for Audiologists. Psychology Press.

Moser, P. J. (2013). Electronics and Instrumentation for Audiologists. Psychology 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.

Speaks, C. E. (1999). Introduction To Sound: Acoustics for the Hearing and Speech Sciences (3 edition.). San Diego: Cengage Learning.

Villchur, E. (1999). Acoustics for Audiologists (1 edition.). San Diego, Calif: Delmar Cengage Learning.

Unit 1

Theraja, B. L. (2008). *Textbook of Electrical Technology*: Chand (S.) & Co Ltd , India.

Godse, A. P., & Bakshi, U. A. (2007).*Electronic Devices and Circuits I*: Technical Publications.

Mehta.V.K. & Mehta. R (2006): *Basic Engineering*: S. Chand & Co ltd

Thompson, D. M. (2005). *Understanding Audio: Getting the Most Out of Your Project or Professional Recording Studio.* : Berklee Press.

Cavanaugh, W. J., Tocci, G. C., & Wilkes, J. A. (2009). Architectural

Acoustics: Principles and Practice: Wiley.
Kleiner, M. (2011). *Acoustics and Audio Technology*, Third Edition (Acoustics: *Information and Communication*): J. Ross Publishing.
Fahy, F. J. (2000). *Foundations of Engineering Acoustics*: Academic Press.
Rossing, .T. D., Moore, F.R.& Wheeler .P.A (2001): *The Science of Sound*(3rd ed): Addison-Wesley.
Unit 2 Rajesh, R. S. (2002). Computer Networks: Fundamentals and Applications: Sangam Books Ltd.
Robertazzi, T. (2011). Basics of Computer Networking (Springer Briefs in Electrical and Computer Engineering): Springer.
Unit 3 Beranek, L. L., & Mellow, T. (2012). *Acoustics: Sound Fields and Transducers*: Academic Press.
Katz.J. (2014): *Handbook of Clinical Audiology* (7th.ed): North American
Sandlin.R.E(2000). *Textbook of Hearing aid amplification*: Technical and clinical consideration: Cengage hearning.
Unit 4 Godse, M. A. P., & Bakshi, M. U. A. (2008). Linear & Digital IC Application: Technical Publications.
Malvino. A., & Bates. D. (2015): Electronics principle (8thed): Mc Graw-Hill education.

Course 1.6
Clinicals (Speech-Language Pathology)

Practical

1. Demonstrate normal aspects of speech and analyse 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.
2. Demonstrate normal aspects of language and analyse perceptually variations in language in different recorded samples of typical individuals at different age groups(children, adults and older adults) and sex.
3. Demonstrate stress, rhythm and intonation and variations in rate of speech and analyse perceptually variations in prosody in different recorded samples oftypicalindividuals at different age groups (children, adults and older adults) and sex.
4. Record a standard passage, count number of syllables and words, identify syllablestructure, syntactic structures in the passage.
5. Oral mechanism examination on 5 normal children and 5 normal adults.
6. Prepare a chart and show the developmental stages of speech and language behavior.
7. Administer standardized tests for assessment of delayed speech and languagedevelopment such as REEL, SECS, LAT, 3DLAT, ALD each on any 2 children.

8. Study the available normative data (Indian/Western) of speech such as respiratory,phonatory, resonatory and articulatory parameters.
9. Measure the following in 5 normal subjects:
   (a) Habitual frequency
   (b) Frequencyrange
   (c) Intensity
   (d) Intensity range
   (e) Phonation duration
   (f) Rate of speech
   (g) Alternate Motion Rates and Sequential Motion Rates
   (h) (h) s/z ratio.

Course 1.7 Clinicals (Audiology)

Perform the following experiments

1. Measure most comfortable level on 10 participants with normal hearing sensitivity.
2. Measure uncomfortable levels on 10 participants with normal hearing sensitivity.
3. Calculate the sensation levels of MCL and UCLs in above 10 participants.
4. Measure difference limen of intensity, frequency and duration on 10 normal hearingadults and plot it in graphical form and interpret the results.
5. Measure equal loudness level contours at minimum level, 40 dB SPL, 70 dB SPL (1kHz) in 5 normal hearing adults.
6. Take case history on 5 adults and 5 children with hearing problem and correlate theinformation from case history to results of pure tone audiometry.
7. Administer different tuning fork tests on 5 simulated conductive and 5 sensori neuralhearing loss individuals.

Course 1.8

Indian Constitution and Human Rights

Unit -I - 1. Meaning and importance of constitution
2. Making of Indian Constitution
3. Salient Features and the preamble

Unit -II - 1. Fundamental Rights
2. Fundamental Duties
3. Directive Principles

Unit -III - Union Government
1. Lok Sabha and Rajya Sabha (Composition, powers & Functions)
2. President & Prime Minister (Powers. Function, Positions)
3. Supreme Court- Composition, Powers & Functions

Unit - IV- Major Functionaries
1. Union Public Service Commission
2. Election Commission
3. Planning Commission (NITI)

SEMESTER II

Course 2.1
Speech-Language Pathology - Assessment & Management

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

- Describe normal speech sound development and characterization of individuals with speech sound disorders.
- Perform phonological analysis and assessment of speech sound disorders.
- Plan intervention for individuals with speech sound disorders.

Unit 1 **Overview of Procedures Involved in Speech-Language Diagnostics-12 Hrs**

1.1 Case history – need for the case history – essential factors to be included in the case history form – comparison of adults vs. children case history – usefulness of the case history, Case history format for various communication disorders

1.2 Basic terminologies and concepts

1.3 Introduction to diagnostics, Classification of disorders: DSM, ICD, terminologies in the diagnostic process, general principles of diagnosis, diagnostic setup and tools.

1.4 Characteristics of a diagnostic clinician

1.5 Diagnostic setup and tools

Unit 2 **Diagnostic Models and Approaches-12 Hrs**

2.1 Diagnostic models and its application to communication disorders – SLPM, Wepman, Bloom and Lahey

2.2 Types of diagnoses: Concept, application and its relevance to communication disorder – Clinical diagnosis, direct diagnosis, differential diagnosis, diagnosis by treatment, diagnosis by exclusion, team diagnosis, instrumental diagnosis, provocative diagnosis, tentative diagnosis advantage/disadvantages

Unit 3 **Basic Concepts of Intervention and Procedures Involved in Speech-Language Therapy-14 Hrs**

3.1 General principles of speech and language therapy

3.2 Models in Therapeutics and its application to Speech-Language Therapy: Medical model, Behavioural model and Learning Models
3.3 Approaches to speech and language therapy – Formal, informal and eclectic approaches; Behaviourist, Linguistic-Cognitive and Social interactionist approach
3.4 Strategies for speech and language therapy-Individual Specific and Developmental strategies
3.5 Speech therapy set-up
3.6 Individual and group therapy
3.7 Integrated and Inclusive Education
3.8 Telepractice and Apps

Unit 4 **Execution of Speech-Language Therapy, Documentation and Professional Codes-14 Hrs**

4.1 Planning for speech and language therapy – goals, steps, procedures, activities
4.2 Techniques for Speech and language therapy for various disorders of speech and language in Children
4.3 Importance of behavioural principles in speech and language therapy
4.4 Counseling and Guidance -Facilitation of parent participation and transfer of skills
4.5 Documentation of clinical records
4.6 Evaluation of therapy outcome
4.7 Ethics in diagnosis and speech language therapy
4.8 Self-appraisal of clinicians
4.9 Professional code of conduct for clinicians

Practicum

1. List the vowels and consonants in your primary language and provide phonetic and acoustic descriptions for the speech sounds.
2. Identify the vowels and consonants of your language on the IPA chart and practice the IPA symbols by transcribing 25 words.
3. Make a list of minimal pairs (pairs of words which differ by only one phoneme) in English.
4. Make a list of minimal pairs in any language other than English.
5. Identify the stages of speech sound acquisition by observations from videos of children from birth to 5 years of age.
6. Record the speech of a two year old typically developing child, transcribe and analyze the speech sample.
7. 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.
8. Analyze transcribed speech samples of typically developing children – practice independent and relational analysis.
9. Practice instructions for phonetic placement of selected sounds.
10. Develop a home plan with activities for any one section of phonological awareness in English and in one Indian language.

References

Common
Bernthal, J.E., Bankson, N.W., & Flipsen, P. (2013). Articulation and phonological disorders.(7th Ed.). Boston, MA: Pearson.
Dodd, B. (2013). Differential diagnosis and treatment of children with speech disorder.(2nd Ed). NJ: Wiley.

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

Vasanta, D. (2014). Clinical applications of phonetics and phonology. ISHA Monograph.Vol 14, No. 1.Indian Speech & Hearing Association.

Velleman, S. L (2003). Resource guide for Childhood Apraxia of Speech.Delmar/Thomson Learning.

Williams, A., McLeod, S., & McCauley, R. (2010). Interventions for speech sound disorders in children. Baltimore: Brookes.

Unit 1

Haynes.W.O., & Pindzola.R.H (2008) Diagnosis and Evaluation in Speech Pathology, 7th Edition, 44-55 Pearson & Ab.

Meitus,I.J & Weinberg,B (2000) Diagnosis in Speech-Language Pathology, Unit 2, 31-71, Allyn & Bacon.

Haynes.W.O., & Pindzola.R.H (2008) Diagnosis and Evaluation in Speech Pathology, 7th Edition, Unit 2 and 3, 37-43, Pearson & Ab.

Shipley.K.G., &Mc Afee, J.G (2008) Assessment in Speech-Language pathology: A resource manual.

Unit 2

Landis,K.,Woude,J.V.,& Jongsma.A.E (2004) The Speech Language athology Treatment Planner, John Wiley & Sons.

Anderson, C.,& VanderderGag (2005) Speech and Language Therapy: Issues in Professional Practice, Whurr Publishers.

Unit 3

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

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

Roth.P.F.,& Worthington,M.S. (1996) Treatment Resource Manual for Speech Language Pathology, Unit 1, 1-40, Singular Publishing Inc.

Unit 4

Burrus,E.A.,& Haynes, O.W (2009) Professional Communication in Speech-Language pathology: How to Write, Walk and act like a Clinician, Unit 3 and 4, 41-55, Plural Publshing inc.

Beech.R.J., & Harding, L., & Jones,H.D. (1993) Assessment in Speech Language Therapy, Unit 1 and 2, 1-35, Routledge

Course 2.2 Audiological Evaluation

Objective

After completing this course, the student will be able to

- Understand and carryout experiments to measure differential sensitivity loudness and pitch
- Take case history, administer the tuning fork tests and interpret the results
- Administer pure tone audiometry including masking on clinical population and
- Appreciate the theoretical back ground of it
- Carryout different tests involved in speech audiometry appreciate the theoretical background
- Carryout subjective calibration and daily listening checks of the audiometer
- Get adequate theoretical information necessary to understand concepts involved in objective calibration

Unit 1 **Pure tone Audiometry-14 Hrs**

1.1 Historical developments, Rationale, Classification of audiometers, Instrumentation, Components and parts of an audiometer, Different types of transducers, their performance and technical specifications – Head phones (such as TDH-39, TDH-49, TDH-50, HDA-200, HDA-500), Bone vibrators (such as B71, B -72, KH 70 & A 20), Loud speakers, Insert ear phones (ER-3A, ER-5A), Microphones (Talk forward & Talk back), VU meter, Ear cushions.

1.2 Standards:National and International standards related to Pure tone Audiometry (ANSI, ISO, IEC, ASHA & IS/BIS), Permissible Ambient Noise levels in audiometric test rooms.

1.3 Audiogram, construction of audiogram, Symbols used, Interpretation of audiogram (degree, type & configuration), Usefulness of Audiogram

1.4 Bone conduction (BC) Audiometry: Importance, challenges in bone conduction testing

1.5 Methods to find threshold (AC & BC): Method of limits, Hughson & Westlake method, Modified Hughson Westlake Method, ASHA guidelines, ANSI guidelines

1.6 Factors affecting AC and BC threshold, Limitations of Pure tone Audiometry

Unit 2 **Speech Audiometry-12 Hrs**

2.1 Historical developments, rationale and objectives

2.2 Different type of speech tests - Speech detection threshold (SDT), Speech recognition threshold(SRT), speech identification scores (SIS) - Definition, Material used, Procedure for obtaining SDT, SRT and SIS, Response mode and their clinical applications. BC speech Audiometry

- Correlation between PTA and speech audiometry results
- PIPB function, Articulation Index,
- National and International standards related to Speech Audiometry (ANSI, ISO, IEC, ASHA & IS/BIS),

2.3 Factors affecting speech audiometry, Limitations of speech Audiometry

2.4 Speech materials available in Indian languages and English for Speech Audiometry (SRT & SIS)

2.5 Loudness based tests - MCL, UCL, Dynamic range - Definition, Materials used, Procedure, and Clinical Applications.

Unit 3 **Clinical Masking-14 Hrs**

3.1 Definition, Terminology related to masking: Test ear, non-test ear, masker, maskee, cross over, cross hearing, shadow curve and central masking.

3.2 Types of masking, Different types of stimuli used as maskers, Critical Band Concept,

3.3 Interaural attenuation (IA), factors affecting IA. Criteria for masking during AC, BC and factors considered.

3.1 Factors determining amount of masking noise- Minimum and Maximum effective masking level for AC and BC, speech.

3.2 Procedures for masking – Methods to find masked threshold and factors to be considered in adequate masking, Naunton's Dilemma, Rainvelle, SAL tests and Fusion Inferred test (FIT)

Unit 4 **Calibration-12 Hrs**

4.1 Calibration of audiometers:

- Subjective/real ear calibration methods for AC and BC
- Electro-acoustic/objective calibration of the output intensity of

Puretone, NBN, WBN and Speech noise through the headphones, insert receiver loud speaker and bone vibrators and frequency calibration, free field speakers calibration

4.2 Calibration of speech stimulus

4.3 Daily listening checks, application of correction factors.

4.4 Artificial ear, Acoustic couplers and Artificial mastoid

Practicum

1. Daily listening check and trouble shoot of different clinical audiometers
2. Preparation of correction factor chart after biological calibration on individuals with normal hearing
3. Getting familiar with different clinical audiometers, parts of audiometers and their functions
4. Familiarization with different types of transducers – earphones/ear cushion combination, speakers, insert earphones, bone vibrators
5. Appropriate placement of various transducers on clients during Audiometry including masking
6. To get familiar with instructions for carrying out pure tone audiometry, Speech audiometry and masking in 5 different languages at least
7. Familiarization with different types of stimuli used in audiometry
8. Establishment of PT thresholds (AC & BC) using ascending, descending and modified Hughson Westlake procedures in 5 individuals with normal hearing
9. Estimation of bone conduction threshold with forehead and mastoid placements in 5 individuals with normal hearing
10. Familiarization with different symbols used on audiogram for unmasked and masked AC, BC, SRT, and SIS for different transducers for right and left ear.
11. Familiarization with materials used for speech audiometry in different Indian languages and English for adults and children
12. To observe the counselling before and after audiological testing
13. Establishing UCL, MCL, DR, SRT, SDT & SIS on 5 individuals with normal hearing
14. Administration of clinical masking on 5 individuals with normal hearing
15. Familiarization with different equipment used for objective calibration of audiometers
16. Observation of objective calibration procedure for audiometers as per

standards

17. Administration of SAL and Rainville on 5 individuals with normal hearing.

References

Common

Durrant, J. D., & Feth, L. L. (2012). Hearing Sciences: A Foundational Approach (1 edition.). Boston: Pearson.

Emanuel, D. C., &Letowski, T. (2008). Hearing Science (1 edition.). Philadelphia: Lippincott Williams and Wilkins.

Gelfand, S. A. (2009). Hearing: An Introduction to Psychological and Physiological Acoustics (5 edition.). London: CRC Press.

Katz, J. (2014). Handbook of Clinical Audiology (7th International edition edition.). Lippincott Williams and Wilkins.

Martin, F. N., & Clark, J. G. (2014). Introduction to Audiology. Boston: Pearson.

Course 2.3 Linguistics and Phonetics

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

- Different branches and aspects of linguistics
- Characteristics and functions of language
- Different branches of phonetics, applied linguistics, and phonology, morphology, syntax, semantics, pragmatics
- Acquisition of language and factors affecting it
- Bi/multilingualism and related issues

Unit 1 **Language and Linguistics-12 Hrs**

1.1 Introduction to Language- Definition, Characteristics of language, Functions of language, Difference between animal communication systems and human language.

1.2 An introduction to the language families of India and language families of the world.

1.3 Writing systems– History of writing systems, Types of writing systems, Indian writing systems

1.4 Introduction to Linguistics – Definition, brief introduction to different branches of linguistics such as Sociolinguistics, Psycholinguistics, Neurolinguistics and Clinical linguistics. Application of linguistics with special reference to communication disorders.

1.5 Transcription systems with special emphasis on International Phonetic Alphabet (IPA); Basic Transcription practices.

Unit 2 **Morphology, Syntax, Semantics and Pragmatics-14 Hrs**

2.1 Morphology – concepts of morph, allomorph, morpheme, bound and free forms, roots etc. Types of morphemes - inflection and derivation. Concept of word, content and function words, form classes, Processes of word formation, endocentric and exocentric constructions, grammatical categories, paradigmatic and syntagmatic relationship.

2.2 Syntax – Concept, Different methods of syntactic analysis – Immediate Constituent (IC) Analysis, Phrase Structure Grammar, Transformational

Generative Grammar, Introduction to the major types of transformations. Types of Sentences, Notions of competence versus performance, deep structure versus surface structure, acceptability versus grammaticality, langue versus parol.

2.3 A brief introduction to Semantics - homonyms, synonyms and antonyms, Semantic Feature Theory.

2.4 A brief introduction to Pragmatics – discourse; intent of communication

Unit 3 **Phonetics and Phonology-12 Hrs**

3.1 Introduction to Phonetics and its different branches – articulatory, acoustic, auditory and experimental phonetics, air-stream mechanism, articulatory classification of sounds – segmentals and supra-segmentals, classification description and recognition of vowels and consonants.

3.2 Introduction to Phonology, classification of speech sounds on the basis of distinctive features; phonotactics; Principles and practices of phonemic analysis; common phonological processes like- assimilation, dissimilation, metathesis, haplology, epinthesis, spoonerism, vowel harmony, nasalisation, neutralization.

Unit 4 **Language acquisition and Language Learning-14 Hrs**

4.1 Issues in first language acquisition; Stages of language development - prelinguistic stage and linguistic stage, acquisition of phonology, acquisition of morphology, acquisition of syntax, acquisition of semantics, acquisition of pragmatics, language and cognition.

4.2 Issues in second language acquisition; differences between first language acquisition and second language acquisition/learning. Bilingualism in children- compound, coordinate, simultaneous, successive

4.3 Inter-language theory, Language transfer & Linguistic interference; Factors influencing second language acquisition/ learning

References

Common

Akmajian, Adrian; Demers, Richard; Farmer, Ann; Harnish, Robert (2010). *Linguistics: An Introduction to Language and Communication*. Cambridge, MA: The MIT Press.

Finch, Geoffrey. (2003). *How to Study Linguistics.* N.Y: Palgrave Macmillan.

O'Grady, William et al. (2005). *Contemporary Linguistics: An Introduction* (5th ed.). Bedford/St. Martin's.

Radford, A., Atkinson, R. M., Britain, D., Clahsen, H., Spencer, A. J. (1999). *Linguistics: An Introduction*, Cambridge University Press.

Yule, G. (2006): *The study of language* (Third edition). Cambridge: Cambridge University Press.

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

Karanth, P (2003). Cross-Linguistic study of Acquired Reading Disorders. Sage Publications, New Delhi. ISBN : 0-306-48319-X

Unit 1

Abbi, Anvita. (2001). *A Manual of Linguistic Field Work and Structures of Indian Languages*. München: LINCOM Europa.

Akmajian, Adrian; Demers, Richard; Farmer, Ann; Harnish, Robert (2010). *Linguistics: An Introduction to Language and Communication*. Cambridge, MA: The MIT Press.

Bhatia, Tej K., and William C. Ritchie (eds.) (2006). Bilingualism in South Asia. In: *Handbook of Bilingualism.* Oxford: Blackwell Publishing.

Yule, G. (2006): *The study of language* (Third edition). Cambridge: Cambridge University Press.

Bloomfield, Leonard. (1933). *Language.* New York: H. Holt and Company.

Buch, A., Erschler, D., Jäger, G., Lupas, A. (2013). Towards automated language

classification: a clustering approach. *Approaches to Measuring Linguistic Differences*. Walter de Gruyter.
Finch, Geoffrey. (2003). *How to Study Linguistics.* N.Y: Palgrave Macmillan.
Unit 2 Akmajian, Adrian; Demers, Richard; Farmer, Ann; Harnish, Robert (2010). *Linguistics: An Introduction to Language and Communication*. Cambridge, MA: The MIT Press.
Cruse, Alan (2004). *Meaning and Language: An introduction to Semantics and Pragmatics*. Oxford University Press.
Radford, A., Atkinson, R. M., Britain, D., Clahsen, H., Spencer, A. J. (1999). *Linguistics: An Introduction*, Cambridge University Press.
Unit 3 Carr, Philip (2003). *English Phonetics and Phonology: An Introduction*. Massachusetts, Blackwell Publishing.
Catford, J.C. (2001). *A Practical Introduction to Phonetics*. Oxford University Press.
Clark and Yallop (1999). *An introduction to phonetics and phonology*. Oxford: Blackwell Publishes Inc.
International Phonetic Association (1999). *Handbook of the International Phonetic Association*. Cambridge University Press.
Lass, Roger (1998. Digitized 2000). "Phonology: An Introduction to Basic Concepts". Cambridge University Press, UK.
Unit 4 Kennison, S. (2013). *Introduction to language development.* Los Angeles, CA: Sage.
Nelson N. W (1998). *Childhood language disorders in context – infancy through adolescence*. Allyn and Bacon, Boston.
Pinker, Steven (2007). *The Language Instinct: How the Mind Creates Language (P.S.)*. Harper Perennial Modern Classics.
Allwright, Dick; Hanks, Judith (2009). *The Developing Language Learning: An Introduction to Exploratory Practice*. Basingstoke: Palgrave MacMillan.
Berk, Laura E. (2009). Language Development. *Child development*. Boston: Pearson Education/Allyn & Bacon.
Cook, V. and Singleton, D. (2014). Key Topics in Second Language Acquisition. Bristol: Multilingual Matters.
Foster-Cohen, S. (2009): *Language acquisition*. London: Palgrave Macmillan.
Sousa, David A. (2011). *How the brain learns*. Thousand Oaks, Calif.: Corwin Press.
Tomasello, Michael (2003). *Constructing a language: a usage-based theory of language acquisition*. Cambridge: Harvard University Press.

Course 2.4 Otolaryngology

Objective 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.
- Causes, signs, symptoms, pathophysiology and management of diseases of laryngeal and articulatory systems

Unit 1 **External and Middle Ear and their Disorders-14 Hrs**

1.1 Clinical anatomy of the ear
1.2 Congenital anomalies
1.3 Diseases of the external ear
1.4 Perforation and ruptures of tympanic membrane

1.5 Eustachian tube dysfunction
1.6 Otitis media with effusion
1.7 Cholesteatoma and chronic suppurative otitis media
1.8 Otosclerosis
1.9 Trauma to temporal bone
1.10 Facial nerve and its disorder

Unit 2 **Inner Ear and its Disorders-12 Hrs**

2.1 Congenital anomalies
2.2 Meniere's Disorder
2.3 Ototoxicity
2.4 Presbyacusis
2.5 Disorders of vestibular system
2.6 Vestibular Schwannoma
2.7 Tinnitus and medical line of treatment
2.8 Pre-surgical medical and radiological evaluations for implantable hearing devices
2.9 Overview of surgical technique for restoration and preservation of hearing
2.10 Post-surgical care and complication of surgery for cochlear implants
2.11 Overview of surgical technique, post-surgical care and complication of surgeries for
2.12 Implantable bone conducted hearing aids and middle ear implant

Unit 3 **Oral cavity, Pharynx, Esophagus and theirDisorders-14 Hrs**

3.1 Anatomy of the oral cavity
3.2 Common disorders of the oral cavity
3.3 Cleft lip and palate – medical aspects
3.4 Clinical anatomy and physiology of pharynx
3.5 Inflammatory conditions of the pharynx, tonsils and adenoids
3.6 Clinical anatomy and physiology of esophagus
3.7 Clinical examination of esophagus
3.8 Congenital and acquired diseases of esophagus
3.9 Airway management procedures

Unit 4 **Larynx and its Disorders-12 Hrs**

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

References

Common

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

Dhingra, P. L. (2013). Diseases of Ear, Nose and Throat (Sixth edition). Elsevier.

O'Neill, J.P. and Shah, J.P. (2016). Self-assessment in otolaryngology. Amsterdam: Elsevier

Postic, W.P., Cotton, R.T., Handler, S.D. (1997). Ear trauma. Surgical Pediatric Otolaryngology. New York: Thieme Medical Publisher Inc.

Wackym, A. and Snow, J.B. (2015). Ballenger's otorhinolaryngology head and

neck surgery. (18th edition). United States: McGraw-Hill Medical

Course 2.5 Pediatrics and Genetics

Objectives:

After studying the course, a student will have:

- A basic idea about the role of genetics in Speech-Language and Hearing
- Knowledge about the various concepts related to growth and development in pediatrics

Unit 1: Basic Concepts and Terminologies in Genetics-05 Hrs

1.1 Principles of genetics – Genes, human chromosome, cytogenetics, mitosis and meosis, numerical aberrations, structural aberrations, the sex chromosome anomalies.

1.2 Introduction to pedigree construction, traits, environment – genetic interactions influencing fetus.

Unit 2: Genetic Assessment-07 Hrs

a. Introduction to laboratory techniques

b. Basic and advanced methods in genetics: cloning, molecular genetics, epigenetics.

c. Study of DNA.

Unit 3: Genetics in Communication Disorders-08 Hrs

2.1 Genetic basis of Speech- Language and Hearing impairment

2.2 An overview of various genetic conditions leading to communication disorders

2.3 Genetic disorders – genetic counseling, Mendelian disorders, chromosomal disorders, nonmendelian modes of inheritance, management of genetic disorders, gene therapy, human genome mapping project (HGMP).

Unit 4: Basics Concepts in Pediatrics-10 Hrs.

3.1 Growth and development – basic concepts, growth from birth to puberty, growth during adolescent period.

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

3.3 Nutritional disorders in children – protein energy malnutrition, water soluble vitamins, fat soluble vitamins, trace elements

Course 2.7

Clinicals (Speech-Language Pathology)

Practical

1. Study the available normative data(Indian/Western) of language such asphonology,semantics, syntax, morphology and pragmatic measures.
2. Perceptual analysis of speech and language parameters in normal (2 children and2adults) and persons with speech disorders (3 adults + 3 children).
3. Prepare a model diagnostic report of a patient with speech and language disorder.
4. Prepare a diagnostic and therapy kit.
5. Make a list of speech language stimulation techniques and other therapy techniquesforvarious speech disorders.
6. Familiarize with the sources for referral and parent counseling procedures.
7. Prepare a report on the available audiovisual material and printed material/pamphletsrelating to speech-language pathology, public education of communication andhearing disorders, etc.
8. Prepare a report on the available clinical facilities and clinical activities of theinstitute.

Clinical Practicum

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

Course 2.8 (SEC)
Clinicals (Audiology)

Practical

1. Calculate the relative intensities with different reference intensities.
2. Calculate decibels when sound intensities are doubled, increased by 4 times
3. Carry out pure tone and speech audiometry on 10 normal hearing individuals.
4. 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.
5. Carryout daily listening checks and subjective calibrations 20 times and observe objective calibration once
6. Perform otoscopy and draw the tympanic membrane of 10 healthy normal individuals
7. Measure difference limen of intensity, frequency and duration on 10 normal hearingadults and plot it in graphical form and interpret the results
8. Measure equal loudness level contours at minimum level, 40 dB SPL, 70 dB SPL (1kHz) in 5 normal hearing adults
9. Take case history on 5 adults and 5 children with hearing problem and correlate theinformation from case history to results of pure tone audiometry
10. Administer different tuning fork tests on 5 simulated conductive and 5 sensori neuralhearing loss individuals

Clinical Practicum

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

Course 2.9 Environmental Studies

Unit 1: Introduction to environmental studies and Ecosystems

- Multidisciplinary nature of environmental studies; components of environment-atmosphere, hydrosphere, lithosphere and biosphere
- Scope and importance; concept of sustainability and sustainable development.
- What is an ecosystem? Structure and function of ecosystem; Energy flow in an ecosystem:food chain, food web and ecological succession. Case studies of the following ecosystems:
    a. Forest ecosystem
    b. Grassland ecosystem
    c. Desert ecosystem
    d. Aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 2: Natural resources: Renewable & Non-renewable Resources and Biodiversity & conservation

- Land resources and land use change; land degradation, soil erosion and desertification.
- Deforestation: causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
- Water: use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state)
- Heating of earth and circulation of air; air mass formation and precipitation
- Energy resources: Renewable & Non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.
- Levels of biological diversity: genetic species and ecosystem diversity; biogeography zones of India; biodiversity patterns and global biodiversity hot spots.
- India as a mega-biodiversity nations; endangered and endemic species of India
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; conservation of biodiversity: in-situ and ex-suit conservation of biodiversity
- Ecosystem and biodiversity services: ecological, economic, social, ethical, aesthetic and informational value.

Unit 3: Environmental Pollution and Environmental Policies & Practices

- Environmental pollution: types, causes, effects and control; air, water, soil, chemical and noise pollution
- Nuclear hazards and human health risks
- Solid waste management: control measures of urban and industrial waste
- Pollution case studies
- Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture.
- Environment laws: environment protection act; air (prevention and control of pollution) act; forest conservation act; international agreements; Montreal and Kyoto protocols and conservation on biological diversity (CBD). The chemical weapons convention (CWC)
- Nature reserves, tribal population and rights, and human, wildlife conflicts in Indian context.

Unit 4: Human communities and the environment and Field work

- Human population and growth: impacts on environment, human health and welfares.
- Carbon foot-print
- Resettlement and rehabilitation of project affected persons; case studies
- Disaster management: floods, earthquakes, cyclones and landslides
- Environmental movements: Chipko, silent valley, Bishnios of Rajasthan
- Environmental ethics: role of indian and other religions and cultures in environmental conservation
- Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi)
- Visit to an area to document environment assets; river/forest/flora/fauna, etc
- Visit to local polluted site- urban/rural/industrial/agricultural
- Study of common plants, insects, birds and basic principles of identification
- Study of simple ecosystems- pond, river, Delhi Ridge etc

SEMESTER III

Course 3.1 Voice and its Disorders

Objective

After completing this course, the students should be able to

- Describe characteristics of good, normal and abnormal voice and identify voice disorders
- Explain etiology related to voice problems, and its pathophysiology.
- Assess good, normal and abnormal voice.
- Provide counselling and therapy to individuals with voice disorders.

Unit 1 **Voice Production and Correlates of Voice -12 Hrs**

1.1 Review of anatomy of respiratory, laryngeal, resonatory systems and vocal folds (in detail).
1.2 Voice-definition and characteristics.
1.3 Physiology of voice – voice production, Theories of phonation, pitch and loudness change
1.4 Correlates of voice – acoustic, psycho-physical, aerodynamic and physiological correlates
1.5 Changes in voice with age (lifespan) and factors influencing voice development.

Unit 2 **Assessment of Voice-12 Hrs**

2.1 Assessment of voice: Methods
2.2 Qualitative: pitch, loudness, quality assessment, rating scales, protocols (GRBAS, CAPE-V & others)
2.3 Quantitative-Multi dimensional analysis of voice: Acoustic (such as F0, jitter, shimmer, LTAS, optimum pitch, formant frequencies, H/N and S/N ratio), aerodynamic (such as vital capacity, MPD, MAFR, Sub-glottal pressure), laryngeal (Glottogram, Inverse filtering), myographic.
2.4 Measurement of nasality (Objective and subjective)
2.5 Invasive methods: Such as videokymography, videoendoscopy & videostroboscopy.

Unit 3 **Voice Disorders and its Classification Systems-14 Hrs**

3.1 Classification systems of voice disorders and their clinical applications.
3.2 Voice disorders- Organic, Neurological (vocal fold palsies, Spasmodic dysphonia,Essential voice tremor), Pyschogenic, functional, mutational falsetto, puberphonia, Endocrinal- causes, signs, symptoms, vocal symptoms
3.3 Congenital conditions of larynx- characteristics, signs, symptoms, vocal symptoms: oral and nasal cavities causing voice disorders – stenosis, web, tracheo-laryngomalacia, hypernasality and hyponasality
3.4 Aging of Voice: characteristics, signs, symptoms, vocal symptoms
3.5 Professional use of voice and its disorders.

Unit 4 **Management of Voice Disorders-14 Hrs**

4.1 Voice therapy techniques/ methods: Facilitating Approaches, Establishing/ Modifying the Pitch, loudness, management of hyperfunctional, hypofunctional voice disorders, hypernasality & hyponasality
4.2 Medical and Surgical Management of voice disorders: Common classes of drugs used and surgical procedures used in treatment of some disorders of voice

Practicum

1. 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.
2. Make inferences on age and sex differences across the samples obtained in the previous experiment using perceptual voice profiling.
3. Make a note of differences in pitch, loudness, quality and voice control. Explain how voice reflects ones personality and other social aspects.
4. Analyze 5 male and 5 female voice (including your own voice) in terms of acoustic, aerodynamic, laryngeal and psycho-physical aspects, including the measures of MPT and s/z ratio.
5. Analyze the phonation samples of supra normal, normal and abnormal voice and generate a voice report based on these findings. Compare findings between men & women. Listen to the voice sample and identify the pitch and confirm the same by instrumental analysis.
6. Perform the acoustic analysis (in 4 & 5) using at least one software i.e. Praat, Dr. Speech, MDVP, Vaghmi.
7. Observe and document findings from five laryngeal examinations (pre-recorded or live) such as VLS, stroboscopy or any other relevant.
8. Administer a PROM on five individuals.
9. Prepare a vocal hygiene checklist.
10. Demonstrate therapy techniques such as vocal function exercise, resonant voice therapy, digital manipulation, push pull, relaxation exercises.

Reference

Common

Stemple, J. C., Glaze, L. E., & Gerdeman, B, K. (2014). Clinical voice pathology: Theory & Management (5th Ed.). San Diego: Plural publishers.

Aronson, A.E. & Bless, D. M. (2009). Clinical Voice Disorders.(4th Ed.). New York: Thieme, Inc.

Boone, D. R., McFarlane, S. C, Von Berg, S. L. & Zraick, R, I. (2013): The Voice and Voice Therapy. (9th Ed.). Englewood Cliffs, Prentice-Hall, Inc. New Jersy.

Andrews, M. L. (2006). Manual of Voice treatment: Pediatrics to geriatrics (3rd Ed.). Thomson Delmar Learning.

Colton, R. H, Casper, J. K. & Leonard, R. (2006). Understanding voice problems. Baltimore: Williams & Wilkins.

Sapienza, C. M., & Ruddy, B H. (2013). Voice Disorders.(2nd Ed.). San Diego: Plural Publisher.

Unit 1

Culbertson, W. R., Cotton, S. S., & Tanner, D. C. (2006). Anatomy and Physiology Study Guide for Speech and Hearing. Plural Publishing, San Diego.

Fuller, D. R., Pimentel, J. T., & Peregoy, B. M. (2012). Applied Anatomy and Physiology for Speech Language Pathology & Audiology. Lippincott Williams & Wilkins, Baltimore, MD

Seikel, J., King, D., & Drumright, D. (2015). Anatomy & Physiology for Speech, Language, and Hearing, V Edition. Cengage Learning

Zemlin, W. R. (1998). Speech and Hearing Science: Anatomy and Physiology.Allyn & Bacon, Needham Heights, Massachusetts

Unit 2

Ferrand, C. T. (2014). Speech Science: An Integrated Approach to Theory and Clinical Practice, III Edition. Pearson Education, Inc.

Raphael, L. J., Borden, G. J., & Harris, K. S. (2011). Speech Science Primer:

Physiology, Acoustics and Perception of Speech, VI Edition. Lippincott Williams & Wilkins, Baltimore, MD

Unit 3

Ferrand, C. T. (2014). Speech Science: An Integrated Approach to Theory and Clinical Practice, III Edition. Pearson Education, Inc.

Baken, R. J., & Orlikoff, R. E. (2010). Clinical Measurement of Speech and Voice, II Edition. Delmar, Cengage Learning, New York

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

Paul, R., & Cascella, P. W. (2007). Introduction to Clinical Methods in Communication Disorders, II Edition. Paul H. Brookes Publishing Co. Inc. Baltimore, Maryland

Unit 4

Aronson, A. E., & Bless, D. M. (2010). Clinical Voice Disorders, IV Edition. Thieme, New York.

Behrman, A., & Haskell, J. (2013). Exercises for Voice Therapy, II Edition. Plural Publishing, San Diego

Boone, D. R., McFarlane, S. C., Von Berg, S. L. & Zraick, R. I. (2014). The Voice and Voice Therapy, XI Edition. Thieme, New York.

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

Sapienza, C., & Ruddy, B. H. (2013). Voice Disorders Workbook, II Edition. Plural Publishing, San Diego

Stemple, J. C., Glaze, L., & Klaben, B. (2010). Clinical Voice Pathology: Theory and Management, IV Edition. Plural Publishing, San Diego

Benninger, M. S., & Murry, T. (2008). The Singer's Voice. Plural Publishing, San Diego

Brown, O.L. (1996).Discover your voice.San Diego:Singular Publishing Group

Davies, D. G., & Jahn, A. F. (1998). Care of the Professional Voice: A Management Guide for Singers, Actors and Professional Voice Users. Butterworth-Heinemann, Oxford.

Course 3.2 Speech Sound Disorders

Objective

After completing this course, the student will be able to

- Describe normal speech sound development and characterization of individuals with speech sound disorders.
- Perform phonological analysis and assessment of speech sound disorders.
- Plan intervention for individuals with speech sound disorders.

Unit 1 **Basic Concepts of Phonology and Distinctive Features and Acoustic Features-12 Hrs**

1.1 Fundamentals of articulatory phonetics – phonetic description of vowels & consonants.

1.2 Phonology & phonological theories – generative phonology, natural phonology.

1.3 Phonology & phonological theories – non-linear phonology, optimality theory.

1.4 Methods to study speech sound acquisition – diary studies, cross sectional studies and longitudinal studies.

1.5 Speech sound acquisition

- Birth to one year (development of infant speech perception, early speech production).

- One to two years (consonant inventories, influence of phonological knowledge on vocabulary acquisition).
- Two to five years (growth of phonetic, phonemic, phonotactic inventory – consonants, clusters, phonological patterns).
- Above five years (speech sound mastery and development of literacy – phonological awareness).
- Factors influencing speech sound acquisition

1.6 Acoustics of speech sounds

1.7 Speech intelligibility, factors affecting speech intelligibility, assessment of speech intelligibility

1.8 Co-articulation: types and effect.

1.9 Phonological development in bilingual children-Phonological development in Indian languages.

Unit 2 **Assessment of Speech Sound Disorders-14 Hrs**

2.1 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.

2.2 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.

2.3 Introduction to assessment procedures: aims of assessment, screening and comprehensive assessment.

2.4 Speech sound sampling procedures - issues related to single word and connected speech samples; imitation and spontaneous speech samples, contextual testing, recording of speech samples.

2.5 Review of tests in Indian and other languages - Single word articulation tests, deep articulation of articulation, and computerized tests of phonology, Influence of language and dialectal variations in assessment.

2.6 Transcription of speech sample - transcription methods –IPA and extension of IPA; broad and narrow transcription.

2.7 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).

2.8 Relational analyses – SODA, pattern analysis, (distinctive features, phonological process analysis).

2.9 Speech sound discrimination assessment, phonological contrast testing and stimulability testing.

Unit 3 **Management of Speech Sound Disorders-I12 Hrs**

3.1 Determining the need for intervention – speech intelligibility and speech severity assessment.

3.2 Factors influencing target selection-stimulability, frequency of occurrence, developmental appropriateness, contextual testing, and phonological process analysis.

3.3 Basic considerations in therapy – target selection, basic framework for therapy, goal attack strategies, organizing therapy sessions, individual

vs. group therapy.

3.4 Treatment continuum-establishment, generalization and maintenance; measuring clinical change.
3.5 Facilitation of generalization.
3.6 Maintenance and termination from therapy.
3.7 Motor-based treatment approaches – Principles of motor learning.
3.8 Discrimination/ear training and sound contrast training.
3.9 Establishing production of target sound – imitation, phonetic placement, successive approximation, context utilization.
3.10 Traditional approach, contextual/sensory-motor approaches.
3.11 General guidelines for motor-based treatment approaches.
3.12 Use of technology in articulation correction.

Unit 4 **Management of Speech Sound Disorders -II 14 Hrs**

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

Practicum

1. List the vowels and consonants in your primary language and provide phonetic and acoustic descriptions for the speech sounds.
2. Identify the vowels and consonants of your language on the IPA chart and practice the IPA symbols by transcribing 25 words.
3. Make a list of minimal pairs (pairs of words which differ by only one phoneme) in English.
4. Make a list of minimal pairs in any language other than English.
5. Identify the stages of speech sound acquisition by observations from videos of children from birth to 5 years of age.
6. Record the speech of a two year old typically developing child, transcribe and analyze the speech sample.
7. 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.
8. Analyze transcribed speech samples of typically developing children – practice independent and relational analysis.
9. Practice instructions for phonetic placement of selected sounds.
10. Develop a home plan with activities for any one section of phonological awareness in English and in one Indian language.

Reference

Common

Bernthal, J.E., Bankson, N.W., & Flipsen, P. (2013). Articulation and phonological disorders.(7th Ed.). Boston, MA: Pearson.

Dodd, B. (2013). Differential diagnosis and treatment of children with speech disorder.(2nd Ed). NJ: Wiley.

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

Vasanta, D. (2014). Clinical applications of phonetics and phonology. ISHA Monograph.Vol 14, No. 1.Indian Speech & Hearing Association.

Velleman, S. L (2003). Resource guide for Childhood Apraxia of Speech.Delmar/Thomson Learning.

Williams, A., McLeod, S., & McCauley, R. (2010). Interventions for speech sound disorders in children. Baltimore: Brookes.

Unit 1

Ball, M. J. (2004). Phonetics for speech Pathology. 2nd ed. London. Whurr Publishers Ltd

Bauman-Waengler, J. (2012). Articulatory and Phonological Impairments: A Clinical Focus 4th ed. Boston : Pearson Education – Chapters 1- 5

Bernthal, J.E. & Bankson, Nicholas W. Flipsen (2009) Articulation and Phonological Disorders: Speech Sound Disorders in Children,6th ed.Boston, Pearson Education. Chapters 1- 3

Edwards, H T. (2003). Applied Phonetics: Sounds of American English. 3rd Edn. Delmar, Singular.- Chapter 1, 3 to 13.

Ladefoged & Maddison (2008). The sounds of worlds languages. Cambridge, Blackwood Publisher Inc

Pena Brooks, A. & Hegde, M N (2000*).* Assessment and treatement of Articulation and phonological disorders in children: A dual level text. Austin: Texas, pro.ed – Chapters 2 & 3.

Kent, R.D. & Read, C. (2002). The Acoustic analysis of speech, 2nd Ed. Delmar, Singular Publisher.

Raphael, L J., Borden, G. J. &Harris,(2011). Speech Science Primer. 6th ed. Baltimore. Lippncott Williams & Wilkins

Unit 2

Deepa Anand (2010).Restandardization of Kannada Articulation test.Dissertationsubmitted to All India Institute of Speech and Hearing, Mysore

Bleile, K.M. (2004).Manual of articulation and phonological disorders.Delmar: Centage Learning Diego: Singular Publishing Group.

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

Unit 3

Bernthal, J.E. & Bankson, Nicholas W. Flipsen (2009) Articulation and Phonological Disorders: Speech Sound Disorders in Children, 6th ed.Boston, Pearson Education. Chapter 5

Bleile, K.M. (2004).Manual of articulation and phonological disorders. Delmar: Centage Learning

Gordon- Brannan & Weiss, C E. (2007). Clinical Management of Articulatory and phonological disorders. 3rd ed. Baltimore. Lippincott Williams &Wilkins . Chap- 6-7

Pena Brooks, A. & Hegde, M. N. (2000*).* Assessment and treatement of articulation and phonological disorders in childrenAustin: Texas, pro.ed– Chapter 6.

Unit 4

Bernthal, J.E. & Bankson, Nicholas W. Flipsen (2009). Articulation and Phonological Disorders: Speech Sound Disorders in Children, 6th ed.Boston, Pearson Education. Chapters 6-7

Gordon- Brannan & Weiss, C E. (2007). Clinical Management of Articulatory and phonological disorders. 3rd ed. Baltimore. Lippincott Williams & Wilkins. Chap 8-9

Brooks, A. & Hegde, M N (2000). Assessment and treatement of articulation and phonological disorders in children: A dual level text. Austin: Texas, pro.ed– Chapters 7 & 8.

Course 3.3 Diagnostic Audiology: Behavioral Tests

Objective

After completing this course, the student will be able to

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

Unit 1 **Overview of Behavioral Diagnostic Tests-12 Hrs**

1.1 Introduction to diagnostic audiology: characteristics of a diagnostic test, difference between screening and diagnostic test, functions of a diagnostic test in Audiology

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

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

1.4 Definition of behavioral and physiological tests and their characteristics in diagnostic audiology

1.5 Theories and physiological bases of recruitment

1.6 Theories and Physiological bases of auditory adaptation

1.7 Clinical Indications for administering audiological tests to identify cochlear pathology

1.8 Clinical Indications for administering audiological tests to identify retrocochlear pathology

Unit 2 **Cochlear, Retrocochlear Pathology and Pseudohypacusis-14 hrs**

2.1 Tests to identify cochlear and retrocochlear pathology

- ABLB, MLB
- SISI and its variants
- STAT, TDT and its modification
- Bekesy audiometry
- Brief tone audiometry
- PIPB function
- HINT, QuickSIN
- Glycerol test
- Psychoacoustic tuning curves and TEN test
- Others

2.2 Tests to diagnose functional hearing loss

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

test, Pulse tone methods

2.3 Psycho-social aspects related to pseudohypacusis

Unit 3 **Central Auditory Processing Disorders- 14 Hrs**

3.1 Central auditory processing: definition, different behavioral processes

3.2 Behavioral and clinical indicators of central auditory processing disordersBottle neck and subtlety, redundancy principles and their clinical interpretations.

3.3 Screening techniques for CAPD

3.4 Tests to detect central auditory processing disorders

- Monoaural low redundancy tests - Filtered speech tests, Time compressed speech test, Speech-in-noise test, SSI with ICM,
- Dichotic speech tests – Dichotic digit test,
- Staggered spondaic word test, Dichotic CV test, SSI with CCM,Competing sentence test,
- Binaural interaction tests – RASP, BFT, SWAMI, and MLD
- Tests of Temporal processing – Pitch pattern test, Duration pattern tests,Gap detection test, TMTF
- Screening test for auditory processing
- Overview about CAPD in older adults
- Review of CAPD tests with reference to site of lesion (Brainstem, cortical, hemispheric and interhemispheric lesion)

3.5 Diagnostic criteria for CAPD

3.6 Variables influencing the assessment of central auditory processing:

- Procedural variables
- Subject variables

Unit 4 **Vestibular and Tinnitus Assessment -12Hrs**

4.1 Vestibular assessment

- Overview of balance functioning
- Overview of nystagmus, giddiness, vertigo
- Behavioral tests to assess vestibular functioning (Fukuda stepping test, Tandem gait test,Finger nose pointing, Romberg test, sharpened Romberg test, head thrust test and head impulse test)

4.2 Tests to assess Tinnitus and Hyperacusis

- Overview of Tinnitus and Hyperacusis
- Pitch matching,
- Loudness matching,
- Residual inhibition,
- Feldmann masking curves
- Johnson Hyperacusis Dynamic Range Quotient

4.3 Variables influencing the assessment:

- Procedural variable
- Subject variables

Practicum

1. Administer ABLB, MLB and prepare laddergram (ABLB to be administered by blocking one ear with impression material)
2. Administer classical SISI on 3 individuals and note down the scores
3. Administer tone decay tests (classical and its modifications) and note down the results (at least 3 individuals)
4. Plot PIPB function using standardized lists in any 5 individuals
5. Administer the tests of functional hearing loss (both tone based and speech

based) by asking subject to malinger and having a yardstick of loudness.

6. Administer CAPD test battery to assess different processes on 3 individuals and note down the scores
7. 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.
8. Estimate the pitch and loudness of tinnitus in 2 persons with tinnitus (under supervision). Assess the residual inhibition in them.
9. Plot Feldman masking curves for a hypothetical case
10. Administer Johnson Hyperacusis Dynamic Range Quotient on any 2 of the individuals and note down the scores.

References

Common

Gelfand, S. A. (2009). Essentials of Audiology. Thieme.

Hall, J. W., & Mueller, H. G. (1996). Audiologists' Desk Reference: Diagnostic audiology principles, procedures, and protocols. Cengage Learning.

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.

Martin, F. N., & Clark, J. G. (2014). Introduction to Audiology (12 edition). Boston:Pearson.

Roeser, R. J., Valente, M., & Hosford-Dunn, H. (2007). Audiology: Diagnosis. Thieme.

Stach, B. A. (2010). Clinical audiology: an introduction (2nd ed). Clifton Park, NY: Delmar Cengage Learning.

Course 3.4 Educational Audiology

Objective

After studying the paper the students are expected to realize the following:

- Effects of hearing loss on development and learning
- To analyse the client scenarios and decide what kind of intervention to be provided to the child with hearing loss in the school
- Become aware of criteria for selection of appropriate educational placement of the child
- To apply principles of effective management in classroom/school settings
- Roles of educational agencies and legal agencies for children with disability in India

Unit 1 **Importance of Early Identification and Different Approaches for Communication-12 Hrs**

1.1 Classification of hearing impairment and its importance in educational placement

1.2 Role and responsibilities of Educational Audiologist and team members

1.3 Early identification and its importance in aural rehabilitation.

1.4 Unisensory vs. multisensory approach

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

1.6 Total communication

Unit 2 **Methods of Teaching Language for Children with Hearing Impairment-14 Hrs**

2.1 Methods of teaching language to the hearing impaired and its application in Indian languages

2.2 Natural method: maternal reflective method, Groth's method

2.3 Structured method (grammatical method); Fitzgerald key, box technique APPLE TREE, Patterning

2.4 Combined method (Natural and structured)

Computer aided method.

Unit 3 **Educational Placement-12 Hrs**

3.1 Educational placement of hearing impaired children: Preschool training, Integration, Partial integration, Segregation: day school vs. residential school, Inclusive vs intergrated school.

3.2 Criteria for recommending the various educational placements

3.3 Criteria for selecting the medium of instruction

3.4 Factors affecting their outcome.

3.5 Setting-up classrooms and the modifications for the individuals with hearing impairment: Acoustic, lighting, class strength and amplification and personal and group amplification devices

3.6 Educational problems of the individuals with hearing impairment and the measures taken to overcome the problems in India

Unit 4 **Educational Problems, Laws and Policies for Educating and Counseling Parents-14 Hrs**

4.1 Educational laws and policies with respect to education for children with disability by governmentand non-government agencies

4.2 Recommendations of PWD and UNCRPD for education, Rehabilitation Council of India Act (1992), Persons with Disabilities Act (1995), Right to Education Act (RTE), IEDC Scheme 1992, DPEP scheme, Salamanca statement and Framework for Action on Special Needs Education (1994), Kothari Commission (1992), Rights of disabled, Sarva Siksha Abhiyan

4.3 Education for children with multiple disabilities

4.4 Counseling the parents, teachers andpeers regarding the education of the individuals with hearing impairment in India

4.5 Home training – need, preparation of lessons, long term vs short term plans and activities, correspondence programs, follow-up.

Practicum

1. Prepare schedules for educational placement of 5 children with hearing impairment having different hearing capacities
2. Counsel parents regarding educational placement of the hearing impaired.
3. To prepare a model of an integrated classroom considering the factors affecting integration
4. To visit a school for children with special needs and note down the available facilitates and the steps-to be taken to modify the same

References

Common Lynas,W. (2000).Communication options. In J. Stokes (Ed).Hearing impaired infants – Support in the first eighteen months.London: Whurr Publishers Ltd.

Unit 1 Alpiner, J.G.(1982).Handbook of adult rehabilitative audiology. Baltimore: Williams & Wilkins.

Chermak, G.D. (1981). Handbook of audiological rehabilitation.C.C. Thomas

Hull, R.H. (Ed) (1982).Rehabilitative Audiology. New York: Grune and Stratton

Inc.
Northern, J.L, & Downs, M.P. (1991). Hearing in children. 4th Edn. Baltimore,MD: Williams and Wilkins.
Peter, V. Paul. (2009). Language and Deafness. (Ed). Sudbury, MA: Jones & Bartlett Learning.
Indian Sign Language Dictionary (2002). Sri Ramakrishna Mission Vidhyalaya. International Human Resource Development Centre(IHRDC) for the disabled, Coimbatore. A project supported by CBM international, Germany.
Unit 2 Jackson, A. (1981).Ways and means-3.Hearing impairment a resource book of information, technical aids,teaching material and methods used in the education of hearing impaired children.Hong Kong: Somerset Education Authority.
Stephen D. Krashen, &Tracy D. Terrell (1996). The Natural Approach: Language acquisition in the classroom. Bloodaxe Books Ltd; Janus Book Pub/Alemany Press.
Unit 3 Ross, M., Brackett, D. & Maxon, A.B. (1991). Assessment and management of mainstreamed hearing impairment children: Principles and practice.Austin: Pro. Ed.
Webster, A. & Ellwood, J. (1985).The hearing impaired child in the ordinary school.London: Croom Helm.
Unit 4 Cheryl, J., & Jane, S. (2011). Educational Audiology Handbook,Edition 2, Publisher Cengage Learning.
Correspondence program for Parents of the Deaf, John Tracy Clinic.
Madhumita, P., & George, A. (2004). Handbook of Inclusive Education for Educators, Administrators and Planners, Publisher SAGE.
Umesh, S., & Joanne. D. (2005). Integrated Education in India: Challenges and Prospects. Disability Studies Quarterly, Winter, Volume 25, No. 1.
The Standard Rules of the United Nations (1996). An easy to read version of the Standard Rules on the equalization of opportunities for persons with disabilities. Stockholm: Kitte Arvidsson & Easy-To-Read Foundation.

Course 3.5 Neurology

Objective

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

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

Unit 1 **Essential Neurological Concepts & Relationship between Neuroscience and Speech-Language & Hearing-12 Hrs.**

1.1 Scope of Neuroscience and its branches
1.2 Principles governing the human brain
1.3 Orientation to technical terminology
1.4 Terms related to the Neural structure
1.5 Structure of the CNS
1.6 Nervous system classification
1.7 Techniques for learning Neuroscience

Unit 2 **Gross Anatomy and Blood Supply to the Brain-12 hours**

2.1 Central and peripheral nervoussystem
2.2 Anatomy of the brain
2.3 Different lobes and their functions specifically for speech-languageand hearing
2.4 Spinal cord- structure and functions
2.5 Networking of spinal nerves
2.6 Meninges of the brain and spinal cord
2.7 Autonomic nervous system
2.8 Classification ofspinal and cranialnerves their numbers and functions
2.9 Blood supply to the brain- various arteries supplying blood to various lobes of the brain and importance of Circle of Willis and its importance

Unit 3 **Common Causes of Neurological Conditions and Neurological Assessment-14 Hrs**

3.1 Classification of causes- infections, ageing, metabolic, tumorsandtechnology related
3.2 Preventive measures to reduce the neurological conditions
3.3 High risk registers for neurological conditions
3.4 Introduction to CT scan and MRI.

Unit 4 **Common Neurological Conditions Leading to Speech-language and Hearing Disorders – Signs, Symptoms and Behavioral Characteristics-14 hours**

4.1 Cerebrovascular diseases – ischemic brain damage – hypoxic ischemic encephalopathy, cerebral infarction – intracranial haemorrhage – intracranial, subarachnoid.

4.2 Trauma to the CNS – subdural haematoma, epidural haemotoma, parenchymal brain damages

4.3 Demyelinating diseases, Degenerative, metabolic and nutritional disorders – multiple sclerosis, Alzheimer's disease, Parkinsonism

References

Bhatnagar, S.C. (2012). Neuroscience for the Study of Communicative Disorders. Lippincott, Williams & Wilkins

Webb, W. G., & Adler, R. K. (2008). Neurology for the speech-language pathologist (5th ed.). St. Louis, Mo: Mosby/Elsevier.

Duffy, J. R. (2013). Motor Speech Disorders: Substrates, Differential Diagnosis, and Management (3rd Ed.). University of Michigan, Elsevier Mosby.

Bhatnagar, C. B. (2013). Essential of Neuroscience for the study of communicative disorders.In Neuroscience for the study of communicative disorders (4th Edition). Lippincott Williams

Fogle, T. P. (2013). Neurological disorders in adults. In Essentials of communication sciences and Disorders. Delmar: Cengage learning (pp 314-354) Wilkins : Baltimore (pp 1-34)

Davis, A. G. (2013). Neurological and medical considerations. In Aphasia and related cognitive communicative disorders.New York: university press. (pp23-42)

Course 3.6

Clinicals in Speech Language Pathology

General considerations:

- Exposure is primarily aimed to be linked to the theory courses covered in the semester.
- After completion of clinical postings in Speech –language diagnostics, the student will know (concepts), know how (ability to apply), show (demonstrate in a clinical diary/log book based on clinical reports/recordings, etc), and do (perform on patients/client contacts) the following:

Know:

1. Procedures to obtain a speech language sample for speech & language assessment from children of different age groups such as, pre schoolers, kindergarten, primaryschool and older age groups.
2. Methods to examine the structures of the oral cavity/organs of speech.
3. The tools to assess language abilities in children (with hearing impairment, specificlanguage impairment & mixed receptive language disorder).
4. Development of speech sounds in vernacular and linguistic nuances of the language.

Know-how:

1. To evaluate speech and language components using informal assessment methods.
2. To administer at least two standard tests for childhood language disorders.
3. To administer at least two standard tests of articulation/ speech sounds.
4. To assess speech intelligibility.

Show:

1. Analysis of language components – Form, content & use – minimum of 2 samples.
2. Analysis of speech sounds at different linguistic levels including phonological processes – minimum of 2 samples.
3. Transcription of speech language samples – minimum of 2 samples.
4. Analyse differences in dialects of the local language.

Do:

1. Case history - minimum of 5 individuals with speech & language disorders.
2. Oral peripheral examination - minimum of 5 individuals.
3. Language evaluation report – minimum of 5.
4. Speech sound evaluation report – minimum of 5.

Course 3.7 Clinicals in Audiology

General considerations:

- Exposure is primarily aimed to be linked to the theory courses covered in thesemester, however, not just limited to these areas.
- After completion of clinical postings in auditory diagnostics and auditoryrehabilitation, the student will Know (concept), know how (ability to apply), show(demonstrate in a clinical diary/log book), and do (perform on patients/ clientcontacts) the following:

Know:

1. Methods to calibrate audiometer.
2. Materials commonly employed in speech audiometry.
3. Calculation pure tone average, % of hearing loss, minimum and maximum maskinglevels.
4. Different types of hearing loss and its common causes

Know-how:

1. To obtain detailed case history from clients or parents/guardians.
2. To carryout commonly used tuning fork tests.
3. To administer pure tone audiometry including appropriate masking techniques on adults using at least techniques.
4. To administer tests to find out speech reception threshold, speech identification scores, most comfortable and uncomfortable levels on adults.

Show:

1. Plotting of audiograms with different degree and type with appropriate symbols-audiograms per degree and type
2. Detailed case history taken and its analysis
3. Calculation degree, type and percentage of hearing loss on 5 sample conditions

Do:

1. Case history on at least 5 adults and 3 children with hearing disorders
2. Tuning fork test on at least 2 individuals with conductive and 2 individuals with sensori-neural hearing loss
3. Pure tone audiometry with appropriate masking on 5 individuals with conductive, 5individuals SN hearing loss and 3 individuals with unilateral/asymmetric hearing loss.

SEMESTER IV

Course 4.1
Fluency and Its Disorders

Objective

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 1 **Introduction to Fluency and Stuttering-14 Hrs**

1.1 Fluency: definition, dimensions, development, factors influencing fluency

- Fluency/disfluency/Dysfluency
- Stuttering
- Definition, epidemiological findings, prevalence and incidence
- Stuttering: characteristics

1.2 Nature of Stuttering

- Consistency, adjecency and Lee effect
- situational variability
- stuttering and heredity

1.3 Development of stuttering

- Bloodstein's phases,
- Van Riper's tracks,
- Conture's classification,
- Guitar's classification

Unit 2 **Theories and Assessment of Stuttering-14 Hrs**

2.1 Introduction to theories of stuttering – organic vs. functional

- Cerebral dominance
- Diagnosogenic theory

- Learning theories
- Demands – capacities model

2.2 Brief overview of recent theoretical advances

- Covert repair hypothesis
- EXPLAN theory
- Neuroscience model: DIVA model
- Communication – Emotional model

2.3 Assessment of stuttering and associated problems

- Tools for assessment of stuttering
- Assessment of stuttering in children
- Assessment of stuttering in adults

2.4 Differential diagnosis of developmental stuttering from other fluency disorders

Unit 3 **Management of Stuttering-12 hrs**

3.1 Counselling

3.2 Therapy for children who stutter: Direct/Indirect approaches

- Preventive, Prescriptive and Comprehensive treatmentprogram
- Use of anologies
- Time out and Response cost
- Lidcombe program,
- Parent – child interaction therapy

3.3 Therapy for adults who stutter: stuttering modification and fluency shaping approaches and their rationale

- Prolonged speech therapy
- Airlfow based therapy techniques
- Shadowing
- Habit rehearsal techniques
- DAF
- Masking
- Camper-down program
- Systematic Desensitization
- cognitve- behavior therapy for adults who stutter

3.4 Steps/Sequence of therapy

- MIDVAS
- Establishment, transfer and maintenance

3.5 Relapse and recovery from stuttering

3.6 Measurement of therapy progress & naturalness rating

3.7 Group therapy

Unit 4 **Other Fluency Disorders -12 Hrs**

4.3 Cluttering: definition, characterisitcs, assessment and management

4.4 Neurogenic stuttering/SAAND: definition, characterisitcs, assessment and management

4.5 Psychogenic stuttering: definition, characterisitcs, assessment and management

Practicum

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 adults 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.

References

Common

Bloodstein, O., & Ratner, N. B. (2008). A Handbook on Stuttering (6th Ed.).Clifton Park, NY, Thomson Demer Learning.

Guitar, B. (2014). Stuttering-An Integrated Approach to its Nature and Treatment. 4th Ed. Baltimore, Lippincott Williams & Wilkins.

Hegde, M. N. (2007). Treatment Protocols for Stuttering.CA Plural Publishing.

Howell, P. (2011). Recovery from Stuttering. New York, Psychology Press.

Packman, A., & Attanasio, J.S. (2004). Theoretical Issues in Stuttering. NY, Psychology Press.

Rentschler, G. J. (2012). Here`s How to Do: Stuttering Therapy. San Diego, Plural Publishing.

Ward, D. (2006). Stuttering and Cluttering: Frameworks for Understanding & Treatment. NY, Psychology Press.

Yairi, E., & Seery, C. H. (2015). Stuttering - Foundations and Clinical Applications. 2nd Ed. USA, Pearson Education, Inc.

Unit 1

Bloodstein, O., & Ratner, N. B.(2008). A handbook on stuttering (6th Ed.).Clifton Park, NY: Thomson Demer Learning.

Conture, E.G. (2001). Stuttering: its nature, diagnosis and treatment. Boston, Allyn & Bacon.

Guitar, B. (2014). Stuttering-An integrated approiach to its nature and treatment. 4th Ed. Lippincott Williams and Wilkins, Baltimore.

Manning, W. H. (2010). Clinical decision making in Fluency disorders. 3rd Ed. Delmer, Cengate learning.

St. Louis (1986).Atypical stuttering. Orlando: Academic Press.

Van Riper, C. (1982).Nature of stuttering.2nd Ed. New Jersey: Prentice HallInc.

Yairi, E & Seery, C.H. (2015). Stuttering-Foundations and clinical applications 2nd Ed. Pearson Education, Inc, USA

Unit 2

Bloodstein, O., & Ratner, N. B.(2008). A handbook on stuttering (6th Ed.).Clifton Park, NY: Thomson Demer Learning.

Bothe, A.K. (2004). Evidence-based treatmentr of stuttering. Mahwah, NJ: Earlebaum Associates Inc.

Guitar, B. (2014). Stuttering-An integrated approiach to its nature and treatment. 4th Ed. Lippincott Williams and Wilkins, Baltimore.

Manning, W. H. (2010). Clinical decision making in Fluency disorders. 3rd Ed. Delmer, Cengate learning.

Yairi, E & Seery, C.H. (2015). Stuttering-Foundations and clinical applications 2nd Ed. Pearson Education, Inc, USA.

Unit 3

Bloodstein, O., & Ratner, N. B.(2008). A handbook on stuttering (6th Ed.).Clifton Park, NY: Thomson Demer Learning.

Bothe, A.K. (2004). Evidence-based treatmentr of stuttering. Mahwah, NJ:

Lawrence Earlebaum Assoc Inc.
Guitar, B. (2014). Stuttering-An integrated approach to its nature and treatment. 4th Ed. Lippincott Williams and Wilkins, Baltimore.
Hegde, M.N., & Freed D. (2011). Assessment of communication disorders in adults. Chapter VII., Plural publishing, Oxford, Brisbane.
Manning, W. H. (2010). Clinical decision making in Fluency disorders. 3rd Ed. Delmer, Cengate learning.
Yairi, E & Seery, C.H. (2015). Stuttering-Foundations and clinical applications 2nd Ed. Pearson Education, Inc, USA

Unit 4

Guitar, B. (2014). Stuttering-An integrated approiach to its nature and treatment. 4th Ed. Lippincott Williams and Wilkins, Baltimore.
Hegde, M.N., & Freed D. (2011). Assessment of communication disorders in adults. Chapter VII., Plural publishing, Oxford, Brisbane.
Manning, W. H. (2010). Clinical decision making in Fluency disorders. 3rd Ed. Delmer, Cengate learning.
Ward, D., & Scott, K.S. (2011) Cluttering:A handbook of research, intervention and education. Hove, UK,: Psychology Press.
Yairi, E & Seery, C.H. (2015). Stuttering-Foundations and clinical applications 2ndEd. Pearson Education, Inc, USA

Course 4.2 Child Language Disorders

Objective

After completing this course, the student will be able to

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

Unit 1

Overview of Theories of Language Acquisition and Neurobiological Correlates of Language Development in Children - 12 Hrs

1.1 Overview of theories of language acquisition in children-Traditional and modern approaches in each

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

1.2 Language acquisition including bilinguals/ multilinguals- types (based on age, manner of acquisition, factors affecting language acquisition).

1.3 Role of Psychosocial and environmental factors in language development.

1.4 Neurobiological correlates – neuroanatomial, neurophysiological and neurochemical aspects of language development, Neurobiological underpinnings in child language disorders.

Unit 2

Assessment of Language Characteristics (Oral and Written) of Developmental and Acquired Language Disorders in Children-12Hrs

2.1 Delayed speech and language development associated with:

- Hearing impairment
- Intellectual disability
- Syndromes associated with child language disorders-Down Syndrome, Fragile X Syndrome, William's Syndrome, Klinefelter's Syndrome
- Autism Spectrum Disorders.
- Developmental dysphasia/specific language impairment
- Acquired dysphasia/ Acquired Childhood Aphasia
- ADD and ADHD
- Language Learning disability/ Dyslexia
- Other conditions
- Co-morbidity in children

Unit 3 **Management of development and Acquired Language Disorders in Children - 14 Hrs**

3.1 Hearing impairment
3.2 Intellectual disability
3.3 Syndromes associated with child language disorders-Down Syndrome, Fragile X Syndrome, William's Syndrome, Klinefelter's Syndrome
3.4 Autism Spectrum Disorders.
3.5 Developmental dysphasia/specific language impairment
3.6 Acquired dysphasia/ Acquired Childhood Aphasia
3.7 ADD and ADHD
3.8 Language Learning disability/ Dyslexia

Unit 4 **Management of Children with Language Disorders– 14 Hrs**

4.1 Approaches and techniques for management of language disorders in children – cognitive linguistic, behavioral, play therapy and Augmentative & alternative communication approaches.
4.2 Importance of team approach-Other approaches such as medical/surgical/Physiotherapy/ Occupational therapy
4.3 Benefits, concessions and rights for children with language disorders

Practicum

1. Record mother-child interaction of one typically developing child in the age range of 0-1, 1-2, 2-4, 4-6 and 6-8 years of age. Compare linguistically the out puts from the mother 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 10 typically 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, ComDEALL 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 a 45 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

References

Common

Roseberry-McKibbin, C. (2007). Language Disorders in Children: A multicultural and case perspective. Boston: Pearson Education, Inc.

Paul, R. (2013). Language disorders from infancy through adolescence (4th ed.). 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

Hegde, M.N. (2005). Treatment protocols for language disorders in children – Vol. 1 & 2. San Diego: Plural Publishing

Owens, R.E. (2008). Language development: An introduction (7th ed.). Boston: Pearsons

Reed, V.A. (2004). An Introduction to children with language disorders (3rd Ed.) New York: Allyn & Bacon

Rout, N and Kamraj, P (2014). Developing Communication - An Activity Book, A publication by NIEPMED, Chennai. Freely downloadable from http://niepmd.tn.nic.in/publication.php. ISBN 978-81-928032-41.

Unit 1

Bhatia, T. K. & Ritchie, W. C. (2014). Handbook of Bilingualism and multilingualism. 2nd Ed. East Sussex, Wiley Blackwell.

Bialystok, E. (2001). Bilingualism in Development: Language, Literacy and Cognition. New Delhi, Cambridge University Press.

DeHouwer, A. (2000). An Introduction to Bilingual Development. Bristol, Multilingual Matters.

Gleasom, J. B. (2005). The Development of Language, 6th Ed, Pearson Education, Inc

Hulit, L. M. & Howard, M. R. (2006). Born To Talk: A Introduction to Speech and Language Development, 4th Ed, Boston: Pearson Education, Inc.

Ingram, J. C. L. (2007). Neurolinguistics- An Introduction to Spoken Language Processing and its Disorders, Melbourne: Cambridge University Press.

Levey, S. (2014). Introduction to Language development. San Diego: Plural Publishing Inc.

Owens, R. E. (2008). Language Development: An Introduction. 5th Ed, Boston: Pearson Education, Inc.

Rouse, M. H. (2016). Neuroanatomy for Speech Language Pathology & Audiology. Burlington: Jones & Bartlett Learning.

Unit 2

Angell, C. A. (2010). Language Development and Disorders- A Case Study Approach, LLC: Jones & Bartlett Publishers.

Burack, J. A., Hodapp, R. M., & Zigler, E. (1998).Handbook of mental retardation and development.London: Cambridge University Press.

George J. D. & Lee, K. (2011). Young Children with ADHD: Early Identification and Intervention. Washington DC: American Psychological Association.

Gregg, N. (2009). Adolescence & Adults with Learning Disabilities and ADHD-Assessment and Accommodation. New York: Guilford Publications, Inc.

Hegde, M. N.(1996). A Course Book on Language Disorders in Children. San Diego: Singular Publishing Group.

Jeanette, R. (2007). Learning Disability. 2nd Ed. New York: John Wiley and Sons.

Jena, S. P. K. (2013). Learning disability: Theory to practice. New York: Sage Publications.

Kaderavek, J. N. (2015). Language disorders in children: Fundamental concepts of

assessment and intervention. 2nd Ed. USA: Pearson Education Inc.
Karanth, P. & Joe, R. (2003). Learning disabilities in India. New Delhi: Sage Publications.
Lees, J. A.(2005). Children with Acquired Aphasias. London: Whurr Publishers Ltd.
Lynn, A. (2008). Autism and Asperger Syndrome. San Diego: Plural Publishing.
Norbury, P. R. & Courtenay F. (2012). Language Disorders from Infancy through Adolescence: Listening, Speaking, Reading, Writing, and Communicating. Missouri: Elsevier Mosby.
Owens, J. R., Metz, D.E. & Farinella, K.A. (2011). Introduction to Communication Disorders-A Lifespan Evidence Based Perspective. Upper Saddle River, NJ: Pearson Education, Inc.
Ozonoff, S., Dawson, G., Mc Partland, J. C. (2015). A Parent`s Guide to High-Functioning Autism Spectrum Disorder: How to Meet the Challenges and Help Your Child Thrive. New York: The Guilford Press.
Paul, R. (2007). Language Disorders from a Developmental Perspective: Essays in Honor of Robin S. Chapman. New York: Lawrence Erlbaum Associates.
Paul, T. G. (2011). A Beginner`s Guide to Autism Spectrum Disorders: Essential Information for Parents and Professionals, London: Jessica Kingsley Publishers.
Shyamala, K. Chengappa. (2012). Language disorders in Children. Mysore, India: Central Institute of Indian Languages.
Vallikkat, S. (2012). Handbook of Learning Disability. New Delhi: Kanishka Publishers and Distributors.
Vinson, B. P. (2012). Language disorders across the lifespan. 3rd Ed. USA: Delmar Cengage Learning.

Unit 3 Damico, J. S., Muller, N., & Ball, M. J. (2010). The Handbook of Language and Speech disorders, UK: Blackwell Publishing Limited.
Haynes, W. O. & Pindzola, R. H. (2004). Diagnosis and evaluation in speech pathology. 6th Ed. USA. Library of Congress Cataloging.
Hegde, M. N. & Christine, M. A. (2006). Language Disorders in Children: An Evidence Based Approach to Assessment and Treatment. Boston: Pearson Education, Inc.
Hegde, M. N. & Davis, D. (2005). Clinical methods and practicum in speech-language pathology. 4th Ed. New York: Thomson Delmar Learning.
Kaderavek, J. N. (2015). Language disorders in children: Fundamental concepts of assessment and intervention. 2nd Ed. USA: Pearson Education Inc.
Lee, W. A. (2010). A Best Practice Guide to Assessment and Intervention for Autism and Asperger Syndrome in Schools. London: Jessica Kingsley Publishers.
Rhea, P. & Cascella, P. W. (2007). Introduction to Clinical Methods in Communication Disorders. 2nd Baltimore: Maryland. Paul H. Brookes.

Unit 4 George J. D. & Lee, K. (2011). Young Children with ADHD: Early Identificationand Intervention. Washington DC: American Psychological Association.
Hegde, M. N. & Davis, D. (2005). Clinical methods and practicum in speech-language pathology. 4th Ed. New York: Thomson Delmar Learning.
Hegde, M. N. (2008). Pocket guide to Treatment in Speech Language Pathology. New York: Thomson Delmar Learning.
Waterhouse, S. (2001). A Positive Approach to Autism. London: Jessica Kingsley.

Course 4.3

Diagnostic Audiology: Physiological Tests

Objective

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, AEP's and OAE's as per the clinical need
- Make appropriate diagnosis based on the test results and suggest referrals.

Unit 1 **Immittance Evaluation-12Hrs**

1.1 Introduction: Definition of a physiological test, List of physiological tests in Audiology, overview of their clinical significance

1.2 Principle of immittance evaluation: Concept of impedance and admittance, their components, method to calculate the total impedance/admittance, resonant frequency, concept of acoustic impedance, justification for using admittance in clinical measurements, justification for using 226Hz probe tone

1.3 Instrumentation

1.4 Tympanometry: definition, measurement procedure, response parameters (tympanometric peak pressure, static admittance, gradient /tympanometric width), their measurement and normative, classification of tympanogram,clinical significance of tympanometry

1.5 Esustachian tube functioning tests of tympanometry: overview on pressure equalization function of ET, Valsalva, Toynbee, William's pressure swallow, Inflation-deflation test.

1.6 Overview on multicomponent and multi-frequency tympanometry

1.7 Reflexometry: Definition, acoustic reflex pathway, measurement procedure, concept of ipsilateral and contralateral acoustic reflexes, Jerger box pattern, clinical applications of acoustic reflexes, Reflex decay test.

1.8 Overview on wide band reflectance and wide band tympanometry

Unit 2 **Auditory Brainstem Response -14 Hrs**

2.1 Introduction and classification of AEPs

2.2 Instrumentation

2.3 Principles of AEP recording techniques: Stimulus related, acquisition related: Near vs far field recording, Electrode Impedance, Electrode montage (Dipole orientation, Scalp distribution), Common mode rejection, Pre-amplification, Filtering, Time locked acquisition, Artifact rejection windowing, Averaging.

2.4 Introduction to Auditory brainstem responses (ABR), generators

- Protocol and procedure of recording Auditory brainstem response
- Factors affecting auditory brainstem responses
- Analysis of ABR and clinical inferences
- Clinical applications of ABR

Unit 3 **Middle and Long Latency Auditory Evoked Potentials-12 Hrs**

3.1 Introduction to middle and late latency auditory potentials

- Generators ofMLR, ALLR and
- other late auditory potentials (P300 and MMN, P600, N400, T-complex, CNV)
- Protocol for recording MLR, ALLR, P300 and MMN
- Analysis of MLR, LLR, P300 and MMN
- Factors affecting MLR and ALLR
- Interpretation of results and their clinical applications of MLR and cortical auditory evoked potentials

Unit 4 **Otoacoustic Emissions and Tests of Vestibular functioning - 14 Hrs**

4.1 Introduction to Otoacoustic emissions with a brief note on history

- Origin and classification of OAEs

4.2 Instrumentation

- Procedure of OAE measurement: SOAE, TEOAEs, and DPOAEs
- Interpretation of results: SOAE, TEOAEs, and DPOAEs
- Factors affecting OAEs: SOAE, TEOAEs, and DPOAEs
- Clinical applications of OAEs: SOAE, TEOAEs, and DPOAEs
- Contralateral suppression of OAEs and its clinical implications

4.3 Overview on structure and function of vestibular system

- Overview on other systems involved in balance including VOR and VSR
- Signs and Symptoms of vestibular disorders
- Team in the assessment and management of vestibular disorders
- Tests for Assessment
- Electronystagmography and its clinical significance: Measurement procedure and interpretation: tests for peripheral and central vestibular function
- Overview on VNG
- VEMP: c-VEMP and o-VEMP, recording procedure, response interpretation and clinical inferences

Practicum

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 quatify the decay manually using cursor (5 individuals).
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)

References

Common

Hall, J. W., & Mueller, H. G. (1996). Audiologists' Desk Reference: Diagnostic audiology principles, procedures, and protocols. Cengage Learning.

Hood, L. J. (1998). Clinical Applications of the Auditory Brainstem Response. Singular Publishing Group.

Hunter, L., & Shahnaz, N. (2013). Acoustic Immittance Measures: Basic and Advanced Practice (1 edition). San Diego, CA: Plural Publishing.

Jacobson, G. P., & Shepard, N. T. (2007). Balance Function Assessment and Management (1 edition). San Diego, CA: Plural Publishing Inc.

Katz, J., Medwetsky, L., Burkard, R. F., & Hood, L. J. (Eds.). (2007). Handbook of Clinical Audiology (6th revised North American ed edition). Philadelphia: Lippincott Williams and Wilkins.

McCaslin, D. L. (2012) Electronystamography/ Videonystagmography (1 edition). San Diego: Plural Publishing.

Robinette, M. S., & Glattke, T. J. (Eds.). (2007). Otoacoustic Emissions: Clinical Applications (3rd edition). New York: Thieme.

Unit 1

Gelfand, S. A. (2009). *Essentials of Audiology*. Thieme

Katz, J., Medwetsky, L., Burkard, R. F., & Hood, L. J. (Eds.). (2007). *Handbook of Clinical Audiology* (6th revised North American ed edition). Philadelphia: Lippincott Williams and Wilkins.

Musiek, F. E., & Rintelmann, W. F. (1999). *Contemporary Perspectives in Hearing Assessment*. Boston: Pearson.

Katz, J. (2014). *Handbook of Clinical Audiology* (Seventh, North American Edition edition). Philadelphia: LWW.

Popelka, G. R. (1981). *Hearing Assessment with the Acoustic Reflex*. Grune & Stratton.

Rintelmann, W. F. (Ed.). (1979). *Hearing Assessment*. Baltimore: Lippincott Williams and Wilkins.

Roeser, R. J., Valente, M., & Hosford-Dunn, H. (2007). *Audiology: Diagnosis*. Thieme.

Unit 2

Hall, J. W. (2006). *New Handbook for Auditory Evoked Responses* (1 edition). Boston, Mass: Pearson.

Hood, L. J. (1998). *Clinical Applications of the Auditory Brainstem Response*. Singular Publishing Group.

Hunter, L., & Shahnaz, N. (2013). *Acoustic Immittance Measures: Basic and Advanced Practice* (1 edition). San Diego, CA: Plural Publishing.

Jacobson, J. T. (1985). *The Auditory brainstem response*. College-Hill Press.

Katz, J., Medwetsky, L., Burkard, R. F., & Hood, L. J. (Eds.). (2007). *Handbook of Clinical Audiology* (6th revised North American ed edition). Philadelphia: Lippincott Williams and Wilkins.

Musiek, F. E., Baran, J. A., & Pinheiro, M. L. (1993). *Neuroaudiology: Case Studies* (1 edition). San Diego, Calif: Singular

Katz, J. (2014). *Handbook of Clinical Audiology* (Seventh, North American Edition edition). Philadelphia: LWW.

Unit 3

Hall, J. W. (2006). *New Handbook for Auditory Evoked Responses* (1 edition). Boston, Mass: Pearson.

Unit 4

Hall, J. W. (2000). *Handbook of Otoacoustic Emissions*. Cengage Learning.

Hall, J. W., & Dhar, S. (2010). *Otoacoustic Emissions: Principles, Procedures, and Protocols* (1 edition). Plural Publishing Inc.

Robinette, M. S., & Glattke, T. J. (Eds.). (2007). *Otoacoustic Emissions: Clinical Applications* (3rd edition). New York: Thieme.
Biswas, A. (1995). *Clinical Audio-vestibulometry for Otologists and Neurologists*. Bhalani Publishing House.
Jacobson, G. P., Newman, C. W., & Kartush, J. M. (1997). *Handbook of Balance Function Testing* (1 edition). San Diego, Calif: Singular.
Jacobson, G. P., & Shepard, N. T. (2007). *Balance Function Assessment and Management* (1 edition). San Diego, CA: Plural Publishing Inc.
McCaslin, D.L. (2012). *Electronystamography/ Videonystagmography* (1 edition). San Diego: Plural Publishing.

Course 4.4 Rehabilitative Audiology

Objective

After completion of this course, candidate should be able to:

- List various types of auditory training approaches available for individuals with hearing impairment.
- Explain various types of speech reading tests and speech reading training procedures available.
- Select appropriate management option/s for Tinnitus and Hyperacusis.
- Select appropriate management technique/s for children with special needs.
- Select appropriate management strategies for older adults with hearing impairment

Unit 1 **Auditory Learning - 14 Hrs**

1.1 Definitions and historical background, Auditory training Vs Auditory learning
1.2 Role of audition in speech and language development in normal children and its application in education of individuals with hearing impairment
1.3 Factors affecting outcome of auditory learning
1.4 Methods of auditory training
1.5 Individual Vs Group auditory training
1.6 Auditory training activities
- For individuals of different listening abilities / levels
- Verbal vs. nonverbal material
- For individuals Vs group activities

1.7 Computer based modules for auditory training

Unit 2 **Speech Reading - 14 Hrs**

2.1 Definitions and Need of speech reading
2.2 Visibility of speech sounds – audiovisual perception vs. visual perception
2.3 Visual perception of speech by individuals with hearing impairment
2.4 Overview of speech reading tests, including Indian tests
- Analytic Vs Synthetic tests
- Adults Vs Children

2.5 Factors influencing speech reading.
2.6 Methods of speech reading training: analytical vs synthetic (including speech tracking)
2.7 Individual and group speech reading training
2.8 Speech reading activities
- For adults and children
- For individual vs. group activities

Unit 3 **Management of Tinnitus and Hyperacusis-12 Hrs**

3.1 Audiological management of tinnitus

- Overview on Models related to tinnitus management
- TRT, Masking, others
- Devices used for management

3.2 Audiological management of hyperacusis

Unit 4 **Management of Children with Special Needs and Rehabilitation of Older Adults with Hearing Impairment – 12 Hrs**

4.1 Management of the deaf-blind child

4.2 Management of other multiple disabilities like hearing loss associated with cognitive problems

4.3 Overview on management of children with central auditory processing problems

- Special strategies used for rehabilitation of older adults with hearing impairment
- Communication strategies

4.4 Anticipatory strategies

4.5 Repair strategies

Practicum

1. Evaluation of baseline auditory skills
2. Preparation of lesson plans for home training.
3. Carrying out auditory learning activities on clients with various degrees of hearing impairment
4. Use of communication strategies on clients
5. Observethe speech and language characteristics of individuals with hearing impairment
6. Knowledge on evaluating baseline auditory skills, lesson plan, concise report
7. Role play of auditory learning,speech reading, communication strategies
8. Observation of management of APD and Multiple disability
9. Observation of management of Tinnitus and Hyperacusis

References

Unit 1 Alpiner. J.G & McCarthy. P.A (2000). Rehabilitative Audiology- Children & Adults. United States of America; Lippincott Williams & Wilkins.

Erber, N.P. (1982). Auditory training.Washington: A.G. Bell Association for the Deaf.

Flexer, C. (1994). Facilitating hearing and listening in young children.California: Singular Publishing Inc.

Griffiths, C. (1974).Proceedings of the international conference on auditory technique. Illinois: Charles C Thomas.

Montano, J.J. & Spitzer, J.B. (2014). Adult Audiologic Rehabilitation. 2nd Ed. Plural Publishing Inc.

Oyer, H.J. (1966).Auditory communication for the hard of hearing.New Jersey: Prentice Hall.

Schow, R.L. & Nerbonne, M.A. (1989). Introduction to Aural Rehabilitation. 2nd Ed. Allyn and Bacon

Tye-Murray, N. (2015). Foundations of Aural Rehabilitation. 4th ed. Cengage Learning

Valente. M & Hosford- Dunn. H (2008). Audiology treatment. 2nd Ed. Newyork: Thieme Medical Publishers,Inc.

Vernon.J.A (1998). Tinnitus- Treatment and Relief. United States of America; Allyn and Baccon

Unit 2

Berger, K.W. (1972).Speech reading:Principles and Methods.National Educational Press.

Montano, J.J. & Spitzer, J.B. (2014). Adult Audiolodic Rehabilitaion. 2nd Ed. Plural Publishing Inc.

Nielsen, H.B. & Kampp. E. (1974).Visual and audio-visual perception of speech.Denmark: Sixth Danavox Symposium.

O'Neill, J.J. & Oyer, H.J. (1961).Visual communication for the hard of hearing.New Jersey: Prentice Hall.

Plant, G. & Spens, K.E. (1995).Profound deafness & speech communication.London: Whurr Publishers Ltd.

Sanders, D.A. (1993).Management of hearing handicap infants to elderly.3rd Ed. New Jersey: Prentice Hall.

Tye-Murray, N. (2015). Foundations of Aural Rehabilitation. 4th ed. Cengage Learning.

Unit 3

Alpiner. J.G & McCarthy. P.A (2000). Rehabilitative Audiology- Children & Adults. United States of America; Lippincott Williams & Wilkins.

Erber, N.P. (1982). Auditory training.Washington: A.G. Bell Association for the Deaf.

Flexer, C. (1994). Facilitating hearing and listening in young children.California: Singular Publishing Inc.

Griffiths, C. (1974).Proceedings of the international conference on auditory technique. Illinois: Charles C Thomas.

Montano, J.J. & Spitzer, J.B. (2014). Adult Audiological Rehabilitation. 2nd Ed. Plural Publishing Inc.

Oyer, H.J. (1966).Auditory communication for the hard of hearing.New Jersey: Prentice Hall.

Schow, R.L. & Nerbonne, M.A. (1989). Introduction to Aural Rehabilitation. 2nd Ed. Allyn and Bacon

Tye-Murray, N. (2015). Foundations of Aural Rehabilitation. 4th ed. Cengage Learning

Valente. M & Hosford- Dunn. H (2008). Audiology treatment. 2nd Ed. New York: Thieme Medical Publishers,Inc.

Vernon.J.A (1998). Tinnitus- Treatment and Relief. United States of America; Allyn and Baccon.

Unit 4

Jastreboff. P.J & Hazell.J.W.P (2004). Tinnitus retraining therapy-implementing theNeurophysiological model. United Kingdom; Cambridge University Press

Montano, J.J. & Spitzer, J.B. (2014). Adult Audiolodic Rehabilitaion. 2nd Ed. Plural Publishing Inc.

Snow, J.B.(2004). Tinnitus: Theory and Management. BC Decker Inc.

Tyler.R (2000). Tinnitus handbook. Unites states of America; Singular Thomson Learning.

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

Johnson, C.E. (2012). Introduction to Auditory Rehabilitation. Pearson Education Inc.

Plant, G. & Spens, K.E. (1995).Profound deafness & speech communication.London: Whurr Publishers Ltd.

Trehur, S.E. & Shneider, B. (Ed) (1985).Auditory development in infancy.New York: Plenum Press.

Walsh, S.R. & Holzberg, R. (1981).Understanding and educating the deaf-blind severely and profoundly handicapped-An international perspective. Springfield: Charles C Thomas Publishers.

Course 4.5 Research Methods and Statistics

Objective

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
- Design and execution of research
- Ethical guidelines for conducting research

Unit 1 **Introduction to Research Methods- 12 Hrs**

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

Unit 2 **Research Design in Audiology and Speech-Language Pathology – 14 Hrs**

2.1 Types of research: survey, ex-post facto research, normative research, standard-group
2.2 comparison
2.3 Experimental and quasi experimental research: group design & single subject design; Between groups vs. repeated measures design
2.4 Epidemiologic data sources and measurements
2.5 Epidemiologic methods – questionnaire survey, screening, personal survey, testing
2.6 Media - their advantages and disadvantages
2.7 Incidence and prevalence of hearing, speech, language disorders as per different
2.8 census (NSSO, WHO)
2.9 Internal and external validity of research
2.10 Documentation of research: scientific report writing, different formats or styles (APA, AMA and MLA),
2.11 Ethics of research

Unit 3 **Introduction to Statistics and Data Collection – 12 Hrs**

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

Unit 4 **Statistics and Research Designs- 14 Hrs**

4.1 Choosing statistics for different research designs
4.2 Correlational techniques: Pearson's Product Moment Correlation

Coefficient;

4.3 Spearman's Rank order correlation coefficient

4.4 Statistical inference: concept of standard error and its use; the significance of

4.5 statistical measures; testing the significance of difference between two means z-test,

4.6 t-test; analysis of variance, post hoc tests,

4.7 Non-parametric tests: Chi-square test, Wilcoxon test, Mann-Whitney U test,

4.8 Reliability and validity of test scores: reliability and validity, Item analysis

4.9 Analysis of qualitative data

4.10 Software for statistical analysis

References

Common

Best J. W. & Kahn J. V. (2006). Research in Education. (10thEdition), Singapore: Pearson publication.

Burns, R. B. (2000). Quantitative Methods.In Introduction to Research methods. New Delhi: SAGE publication.

Hegde, M. N. (2003).Clinical research in communicative disorders: Principles and strategies. (3rd Edition), Austin: Pro-ed.

Hesse-Biber, S. N. &Leavy, P. (2011). The Ethics of social research. In The Practice of qualitative research. (2nd Edition), New Delhi: SAGE publication.

Meline, T. (2010). A research primer for communication sciences and disorders. Singapore: Pearson publication.

Ranjitkumar, (2014). Research Methodology. A step by step guide for beginners (4thEdition) New Delhi: SAGE Publication.

Unit 1

Broota, K. D. (1989). Experimental design in behavioural research.New Delhi: Wiley Eastern.

Dominowski, R. L. (1980). Research Methods. New Jersey: Prentice-Hall Inc.

Pannbaker, M.H (1994).Introduction to clinical research in communication disorders.San Diego: Singular Pub Group.

Unit 2

Dane F. C. (2011). Sampling and Measurement. In Evaluating research: Methodology for people who need to read research. New Delhi: SAGE publication.

Hesse-Biber, S. N. &Leavy, P. (2011). Methods of data collection. In The Practice of qualitative research (2nd Edition), New Delhi: SAGE publication.

Huck, S. W. (2012). Reliability and Validity. In Reading statistics and research (6th Edition). Singapore: Pearson publication.

Mitchell, M. L. &Jolley, J. M. (2010). Internal validity. In Research design Explained. Singapore: Wadsworth publication.

Unit 3

Frey, L. R. Botan, C. H. Friedman, P. G. &Krep, G. L. (1991). Investigating communication: An introduction to research methods. Inglewood Cliffs: Prentice Hall.

Haynes, W. O. & Johnson, C. E. (2009). Understanding research and evidence based practice in communication disorders. Singapore: Pearson publication.

Hedrick, T. E. Bickman, L. &Rog, D. J. (1993). Applied research design: A practical guide. London: Sage Publications.

Miller, D. C.(1997). Handbook of research design and social measurement. London: Sage Publications.

Pande, G. C. (1989). Research methodology in social science. New Delhi: Anmol Publishers.

Silverman, F. H. (1998).Asking questions and answering & Types of data. In Research design and evaluation in speech language pathology and

audiology (4th Edition).Boston: Allyn & Bacon.
Whaley, B. B. (2014). Experimental & Surveys. In Research methods in health communication: Principle and application.New York: Taylor & Francis.
Haynes, W. O., & Johnson, C. E., (2009). Evidence –based practice and applied clinical research, In Understanding research and Evidence –based practice in communication disorders, Boston: Pearson publication.
Hegde, M. N. (2003).Clinical research in communicative disorders: Principles and strategies. (3rd Edition), Austin: Pro-ed.

Unit 4

Haynes, W. O., & Johnson, C. E., (2009). Evidence –based practice and applied clinical research, In Understanding research and Evidence –based practice in communication disorders, Boston: Pearson publication.
Hegde, M. N. (2003).Clinical research in communicative disorders: Principles and strategies. (3rd Edition), Austin: Pro-ed.
Hesse-Biber, S. N. &Leavy, P. (2011). Analysis and Interpretation. In The Practice of qualitative research (2nd Edition), New Delhi: SAGE
Schiavetti, L.& Metz, R. (1997). Evaluating research in communication disorders. Boston: Allyn& Bacon.
Hegde, M. N.(2005). The conduct of the student clinician. In Clinical Methods and practicum in Speech Language pathology, (4th Edition), Singapore: Thomson publication
Hesse-Biber, S. N. &Leavy, P. (2011). The Ethics of social research. In The Practice of qualitative research (2nd Edition), New Delhi: SAGE publication.
Hegde M. N. (2010). A course book on Scientific and professional writing for speech language pathology (4thEdition), Singapore: Delmar publication.

Course 4.6
Clinicals in Speech-Language Pathology

General considerations:

- Exposure is primarily aimed to be linked to the theory courses covered in the semester.
- After completion of clinical postings in Speech –language diagnostics, the student will know (concepts), know how (ability to apply), show (demonstrate in a clinical diary/log book based on clinical reports/recordings, etc), and do (perform on patients/client contacts) the following:

Know:

1. Speech & language stimulation techniques.
2. Different samples /procedures required to analyse voice production mechanism (acoustic/ aerodynamic methods / visual examination of larynx/ self evaluation)
3. Different samples /procedures required to analyse speech production mechanism in children with motor speech disorders.

Know-how:

1. To administer at least two more (in addition to earlier semester) standard tests for childhood language disorders.
2. To administer at least two more (in addition to earlier semester) standard tests of articulation/ speech sounds.
3. To set goals for therapy (including AAC) based on assessment/test results for children with language and speech sound disorders.
4. To record a voice sample for acoustic and perceptual analysis.
5. To assess parameters of voice and breathing for speech.
6. Assessment protocol for children with motor speech disorders including reflex profile and swallow skills.
7. Counselling for children with speech-language disorders.

Show:

1. Acoustic analysis of voice – minimum of 2 individuals with voice disorders.
2. Simple aerodynamic analysis - minimum of 2 individuals with voice disorders.
3. Self evaluation of voice – minimum of 2 individuals with voice disorders.
4. Informal assessment of swallowing – minimum of 2 children.
5. Assessment of reflexes and pre linguistic skills - minimum of 2 children.
6. Pre –therapy assessment and lesson plan for children with language and speech sound disorders - minimum of 2 children each.

Do:

1. Case history - minimum of 2 individuals with voice disorders.
2. Case history - minimum of 2 children with motor speech disorders
3. Oral peripheral examination- minimum of 5 children
4. 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.
5. Exit interview and counselling - minimum of 2 individuals with speech language disorders.

Course 4.7 Clinicals in Audiology

General considerations:

- Exposure is primarily aimed to be linked to the theory courses covered in the semester, however, not just limited to these areas.
- After completion of clinical postings in auditory diagnostics and auditory rehabilitation, the student will Know (concept), know how (ability to apply), show (demonstrate in a clinical diary/log book), and do (perform on patients/ client contacts) the following:

Know:

1. Indications to administer special tests
2. Procedures to assess the listening needs
3. National and international standards regarding electroacoustic characteristics of hearing aids

Know-how:

1. To administer at least 1 test for adaptation, recruitment and functional hearing loss.
2. Counsel hearing aid user regarding the use and maintenance hearing aids
3. To troubleshoot common problems with the hearing aids
4. To select test battery for detection of central auditory processing disorders.
5. Select different types of ear moulds depending on type of hearing aid, client, degree, type and configuration of hearing loss

Show:

1. Electroacoustic measurement as per BIS standard on at least 2 hearing aids
2. How to process 2 hard and 2 soft moulds
3. How to preselect hearing aid depending on listening needs and audiological findings on at least 5 clinical situations (case files)
4. How select test battery depending on case history and basic audiological information-3 situations

Do:

1. Tone decay test – 2 individuals with sensori-neural hearing loss
2. Strenger test – 2 individuals with unilateral/asymmetrical hearing loss
3. Dichotic CV/digit, Gap detection test – 2 individuals with learning difficulty or problem in hearing in noise
4. Hearing aid fitment for at least 5 individuals with mild to moderate and 3 individuals with mod-severe to profound

5. Hearing aid selection with real ear measurement system on 3 individuals with hearing impairment

SEMESTER V

Course 5.1
Motor Speech Disorders in Children

Objective

After completing this course, the student will be able to

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

Unit 1 **Introduction to Neuromotor Organization and Sensorimotor Control of Speech and Motor Speech Disorders-12 Hrs**

1.1 Central and peripheral nervous system in speech motor control (motor control by cortical, subcortical structures, centrifugal pathways, brainstem, cerebellum and spinal cord)

1.2 Neuromuscular organization and control and sensorimotor integration

1.3 Introduction to motor speech disorders inchildren

- Motor speech disorders leading to developmental dysarthria
  - Cerebral palsy - definition, causes, associated problems,and classification
  - Syndromes leading to dysarthria(Juvenile progressive bulbar palsy, Congenital supranuclear palsy, Guillain-Barre syndrome, Worster-drought syndrome, Duchenne Muscular dystrophy)
- Motor speech disorders leading to developmental apraxia of speech-definition, causes, associated problems,and classification

Unit 2 **Nature of Motor speech Disorders in Children-12 Hrs**

2.1 Neuromuscular development in normals and cerebral palsy

2.2 Reflex profile

2.3 Different types of cerebral palsy

- Disorders of muscle tone – spasticity, rigidity, flaccidity, atonia
- Disorders of movement – Hyperkinesias and dyskinesias – Ballismus, tremor, tic disorder, myoclonus, athetosis, chorea, dystonia, hypokinesias
- Disorders of coordination - Ataxia

2.4 Speech and language problems in cerebral palsy

2.5 Different types of apraxia-verbal and nonverbal apraxia

2.6 Speech and language characteristics in developmental apraxia

Unit 3 **Assessment of Motor Speech Disorders in Children-14 Hrs**

3.1 Assessment of speech (acoustic, respiratory, resonatory, prosodic aspects)in cerebral palsy – objective and subjective methods

3.2 Assessment of oromotor aspects and feeding

3.3 Assessment of speech in developmental apraxia

3.4 Differential diagnosis of motor speech disorders with other developmental

speech disorder

Unit 4 **Management of Motor Speech Disorders in Children-14 Hrs**

4.1 Team approach to rehabilitation andGeneral principles of motor learning

4.2 Speech and oromotor rehabilitation in cerebral palsy

- Approaches to intervention-Behavioural(vegetative exercises, oral sensorimotor facilitation techniques, compensatory and facilitatory techniques for the correction of respiratory, phonatory, resonatory & articulatory errors) and prosthetic

4.3 Feeding intervention in cerebral Palsy

4.4 Motor approaches: Different approaches in neuromuscular education (such as Bobath, Temple Fay, Phelps)

4.5 Medical management of cerebral palsy (pharmacological and neurosurgical)

4.6 Management of developmental apraxia of speech: specific speech therapy techniques, other approaches

4.7 Augmentative and alternative communication (AAC)- Application of AAC methods in children with motor speech disorders in the Indian context, available AAC options(systems and devices),symbol selection (access methods), assessment for AAC candidacy, AAC intervention (team approach in the advocacy of AAC, instructional strategies)

Practicum

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: 2 newborns; 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.

References

Common

Arvedson, J.C., and Brodsky, L. (2002) (2nd Ed.). Pediatric swallowing and feeding. San Diego, Singular publishing.

Caruso, F. J. and Strand, E. A. (1999). Clinical Management of Motor Speech Disorders in Children. New York: Thieme.

Love, R.J. (2000) (2nd Ed). Childhood Motor Speech Disorders. Allyn & Bacon.

Love, R.J. and Webb, W.G. (1993). (2nd ed.) Neurology for the Speech-Language Pathologist. Reed Publishing (USA)

Rosenthal. S., Shipp and Lotze (1995). Dysphagia and the child with developmental disabilities. Singular Publishing Group.

Velleman, S. L (2003). Resource guide for Childhood Apraxia of Speech. Delmar/Thomson Learning.

Unit 1

Bhatnagar, S.C. (2008). *Neuroscience for the study of Communication disorders*. Williams and Wilkins, Baltimore.

Brookshire, R.H. (1992).*An introduction to neurogenic speech disorders*. St. Louis: Mosby Year Book.

Crary M.A (1993). Developmental motor speechdisorders. San Diego. Whurr Publishers

Ghai, C.L. (1996).*Textbook of human neurophysiology.* Delhi: AITBS.

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

Love, R.J. (2000). *Childhood motor speech disability*. Allyn & Bacon, MA.

Murdoch, B. E. (2011).*Handbook of acquired communication disorders in childhood*. Plural publishing Inc. , San Diego.

Patton, K.T., & Thibodeau, G. A. (2014). *Nervous system*, chapter 8 (pp. 238-292). *In Mosby's Handbook of Anatomy and Physiology*. 2nd edn., Elsevier Inc.

Singh, I. (1997). *Textbook of human neuroanatomy.* Jaypee Brothers Medical publishers, New Delhi

Webb, W.G., & Adler, R.K. (2008). *Neurology for the speech-language pathologist.* Mosby Inc. St. Louis.

Warner, J. J. (2001). *Atlas of Neuroanatomy*. Butterworth-Heinemann, USA.

Patton, K.T., & Thibodeau, G. A. (2014). *Nervous system*, chapter 8 (pp. 238-292). *In Mosby's Handbook of Anatomy and Physiology*. 2nd edn., Elsevier Inc.

Webb, W.G., & Adler, R.K. (2008). *Neurology for the speech-language pathologist.* Mosby Inc. St. Louis.

Warner, J. J. (2001). *Atlas of Neuroanatomy*. Butterworth-Heinemann, USA.

Unit 2

Dodd, B. (Ed) (1995).Differential diagnosis and treatment of children with speech disorders. England: Whurr Publishers Ltd.

Murdoch, B.E (1990). Acquired speech and language disorders: A neuroanatomical and functional neurological approach. London: Chapman & Hall.

Sugden, D., & Wade, M. (2013). Typical and atypical motor development. Mackeith Press, London.

Webb, W.G., & Adler, R.K. (2008). Neurology for the speech-language pathologist. Mosby Inc. St. Louis.

Unit 3 Bahr, D.C. (2001). Oromotor assessment and treatment: Ages and stages. Allyn & Bacon, MA.
Caruso, A. J., & Strand, E.A. (1999). Clinical management of motor speech disorders in children. Thieme Medical Publishers, Inc. New York.
Darby, J.K (Ed) (1985).Speech and language evaluation in neurology: Childhood disorders.Orlando: Grune & Stratton.
Yorkston, K.M., Beukelman, D.R., Strand, E.A., & Bell, K.R.(1999). Management of motor speech disorders in children and adults. Pro-Ed Inc., Austin.
Unit 4 Bahr, D.C. (2001). Oromotor assessment and treatment: Ages and stages. Allyn & Bacon, MA.
Caruso, A. J., & Strand, E.A. (1999). Clinical management of motor speech disorders in children. Thieme Medical Publishers, Inc. New York.
Glennen, S.L., & Decoste, D.C (1997).Handbook of augmentative and alternative communication. San Diego, London: Singular Publishing Group Inc.
Hinchcliffe, A. (2003). Children with cerebral palsy: A manual for therapists, parents and community workers. Vistaar publications, New Delhi.
Hinchcliffe, A. (2007). Children with cerebral palsy: A manual for therapists, parents and community workers, 2nd edn. Sage publications, New Delhi.Langley, B & Lombardino, L.J. (Ed) (1991). Neurodevelopmental strategies for managing communication disorders in children with severe motor dysfunction.
Loncke, F. (2014). Augmentative and Alternative Communication. Plural publishing, Inc., San Diego.
Mecham, M.J. (1996). Cerebral palsy. Pro-Ed Inc., Austin.
Mussel white& Louis (1988).Communicative programming for persons with severe handicaps – Vocal and augmentative strategies. Texas: Pro. Ed.
Tetzchner, S.V., & Martinsen, H. (2001). Introduction to Augmentative and Alternative Communication, 2nd edn. Whurr publishers.
Velleman, S. L. (2003). *Childhood apraxia of speech resource guide*. Clifton Park, NY: Delmar/Thomson/Singular.
Yorkston, K.M., Beukelman, D.R., Strand, E.A., & Bell, K.R.(1999). Management of motor speech disorders in children and adults. Pro-Ed Inc., Austin.

Course 5.2
Structural Anomalies and Speech Disorders

Objective 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 1 **Introduction to Cleft Lip and Palate and Associated Problems-14 Hrs**

1.1. Embryology – development of the palate
1.2. Causes – genetic, environmental and other causes
1.3. Types of cleft lip and palate and classification of cleft lip and palate
1.4. Communication disorders : language and hearing
- Feeding, psychological, and dental problems

- Syndromes associated with cleft lip and palate

Unit 2 **Velopharyngeal Dysfunction and Assessment-14 Hrs**

2.1 Velopharyngeal closure mechanism: Normal Physiology and types of different velopharyngealclosure

2.2 Velopharyngeal Dysfunction (VPD)

- Definition, causes and classification
- Effect of VPD on speech
- Assessment of VPD:Subjective and objective methods.

Unit 3 **Assessment and Management of CLP-12 Hrs**

3.1.Assessment of cleft lip/palate : Cleft palatePerceptual protocols

3.2.Management of cleft lip and palate – surgery, speech therapy, prosthesis

3.3.Speech and language therapy for CLP: early intervention, therapy techniques to improve language,speech therapy techniques to reduce compensatory articulation,speech therapy methods to improve resonance and speech intelligibility

Unit 4 **Types of Oral and Laryngeal Cancer and Management-14 Hrs**

4.1 Definition, Causes and symptoms of laryngeal cancers

4.2 Total laryngectomy – definition, characteristics, associated problems

4.3 Types of glossectomy and mandibulectomy

4.4 Assessment of patients with laryngectomy, glossectomy, mandibul-ectomy

4.5 Pre and post-operative counselling

4.6 .Esophageal speech – anatomy, candidacy, different types of air intake procedure, speech characteristics in esophageal speech

4.7 Tracheo esophageal speech – anatomy, candidacy, different types of TEP, fitting of prosthesis, speech characteristics, complications in TEP

4.8 Artificial larynx – different types, selection of artificial larynx, ultra-speech, speech characteristics

4.9 Gastric pull up – issues and management

4.10 Glossectomy, mandubulectomy –management

Practicum

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 5 individuals 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 in vernacular.

References

Common Berkowitz. S. (2001). Cleft Lip and Palate: Perspectives in Management. Vol II.

San Diego, London, Singular Publishing Group Inc.
Falzone. P., Jones. M. A., & Karnell. M. P. (2010). Cleft Palate Speech. IV Ed., Mosby Inc.
Ginette, P. (2014). Speech Therapy in Cleft Palate and Velopharyngeal Dysfunction. Guildford, J & R Press Ltd.
Karlind, M. & Leslie, G. (2009). Cleft Lip and Palate: Interdisciplinary Issues and Treatment. Texas, Pro Ed.
Kummer, A.W. (2014). Cleft Palate and Craniofacial Anomalies: The Effects on Speech and Resonance. Delmar, Cengage Learning.
Peterson-Falzone, S. J., Cardomone, J. T., &Karnell, M. P. (2006). The Clinician Guide to Treating Cleft Palate Speech. Mosby, Elsevier.
Salmon . J & Shriley (1999). Alaryngeal speech rehabilitation for clinicians and by clinicians. ProEd

Unit 1
Berkowitz (Ed) .,(1996).Cleft lip and Palate.San Diego, Singular Publishing Group.
Jaso Noemi.,& Ana Maria D Cruz, (2013) . Cleft lip and Palate : Etilogy , Surgery and Repairand Sociological Consequences , Nova Science Publisher , Inc
Shprintzen . R. J .&Bardach .J . (1995). Cleft Palate Speech Management:A Multidisciplinary Approach. Mosby. Inc
Wyszynski, D.F (2002). Cleft Lip and Palate: From Origin To Treatment, Oxford University Press

Unit 2
Berkowitz (Ed) (1996)., Cleft Lip and Palate.San Diego, Singular Publishing Group.
Kahn, A. (2000). Craniofacial Anomalies: A Beginner's Guide For Speech LanguagePathologists. Singular Publishing Group. California.
Stenglphofen, J. (Ed) (1993). Cleft Palate: The Nature of Remediation of CommunicationProblems.London,Whurr Publishers.
Shprintzen, R. J. &Bardach .J . (1995). Cleft Palate Speech Management: A Multidisciplinary Approach.Mosby. Inc.

Unit 3
Berkowitz (Ed) (1996)., Cleft Lip and Palate.San Diego, Singular Publishing Group.
Berkowitz. S. (2001). Cleft Lip and Palate:Perspectives in Management. Vol II. Singular Publishing Group. Inc.
Falzone, P., Jones, M. A. & Karnell, M. P. (2001). Cleft Palate Speech. III Ed, Mosby Inc.
Golding, K. J & Kushner (2001) Therapy Techniques For Cleft Palate Speech and Related Disorders, Delmar, Cengage Learning.
Golding, K. J & Kushner (2004). Therapy Techniques For Cleft Palate Speech And Related Disorders, Singular Thompson Learning.
Kahn.A. (2000). Craniofacial Anomalies: A Beginner's Guide For Speech Language Pathologists Singular Publishing Group. California.
Peterson, Falzone, Cardomone, Karnell (2006).The Clinician Guide To Treating Cleft Palate Speech. Mosby. Elsevier .
Phippen Ginette (2014). Speech Therapy In Cleft Palate and Velopharyngeal Dysfunction, J & R Press Ltd.
Rogers, Derek .J& Hamdan (2014). Video Atlas of Cleft Lip And Palate Surgery, Pl; Ural Publishing, Sandiego.
Watson, A. C. H., Sell. D. A & Grunwell P. (2001). Management Of Cleft Lip and Palate. Whurr Publishers Ltd .London.

Unit 4 Casper. K . J. & Colton R. H (1998).Clinical Manual For Laryngectomy and Head / Neck Cancer Rehabilitation. Sandiego. London

Doyle, P.C. (1994).Foundation of Voice And Speech Rehabilitation Following Laryngeal Cancer. San Diego, Singular Publishing Group.

Fawcus, M. (Ed.) (1991). Voice Disorders and Their Management. Singular Publishing. Group. San Diego.`

Salmon, S.J. & Mount, K.H. (Ed) (1991).Alaryngeal Speech Rehabilitation.Austin, Pro. Ed.

Salmon, .J & Shriley (1999). Alaryngeal Speech Rehabilitation For Clinicians and by Clinicians Pro Ed, Austin

Course 5.3 Amplification Devices

Objective

After completion of this course the students should be able to

- Identify different types of hearing aids and explain their components
- Carry out Electro-acoustic measurement and categorize the hearing aids accordingly
- Describe different signal processing strategies and their relevance in different listening conditions
- Cross check whether the hearing aids meet the standards

Unit 1 **Basics and Classifications of Hearing Aids-12 Hrs**

1.1 Historical development of hearing aids- Mechanical, Analogue, Digital Hearing aid

1.2 Basic components of hearing aids –microphones, amplifier, receiver/vibrator, cords, volume control, telecoil, and batteries.

1.3 Body level, ear level hearing aids (BTE, ITE, ITC, CIC, IIC, RIC, RITE)

1.4 Analogue, Programmable and Digital Hearing aid

1.5 Binaural, pseudobinaural, monoaural

1.6 Master hearing aids

1.7 Modular hearing aids

1.8 Group Amplification - hard wire, induction loop, FM, infrared

Unit 2 **Signal Processing in Hearing Aids-14 Hrs**

2.1 Artificial Intelligence in Hearing aids

2.2 Signal processing in hearing aids - BILL, TILL PILL

2.3 Signal enhancing technology- Digital Noise reduction, Directionality of Microphones, Speech cue enhancement

Unit 3 **Compression in Hearing Aids and other Signal Processing- 14 Hrs**

3.8 Output limiting: peak clipping, compression (Input/output compression, compression ratio, compression knee point, WDRC, Compression limiting, high level compression, low level compression), Expansion Hearing Aid.

3.9 Extended low frequency amplification, frequency lowering techniques

3.10 Routing of signals, head shadow/baffle/ diffraction effects

Unit 4 **Electroacoustic Measurement of Hearing aids - 12 Hrs**

4.1 Electro-acoustic measurements for hearing aids Purpose, parameters, instrumentation, procedure (analogue and digital), variables affecting EAM.

4.2 Standards on Electro-acoustic measurements of Hearing aids (BIS, IEC and ANSI standards).

4.3 Environmental tests for Hearing aids

Practicum

- 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 multimeter, 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 rescriptive 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.

References

Common

Hodgson, W.R & Skinner, P.H (1977, 1981).Hearing aid assessment and use in audiologic habilitation.Baltimore: Williams & Wilkins.

Katz, J (1978, 1985, 1994).Handbook of clinical audiology. 2nd, 3rd and 4th Edn. Baltimore: Williams & Wilkins

Pollack, M.C (1980).Amplification for the hearing impaired. NY: Grune & Stratton.

Valente, M., Dunn, H.H & Roeser, R.J (2000).Audiology-treatment.NY: Thieme.

Unit 1

Arthur Schaub (2008). Digital Hearing Aids. NY: Thieme Medical Publishers Inc

Bess, F.H et al. (1981).Amplification in education.Washington: Alexander Graham Bell Association for the Deaf.

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

James M Kates (2008). Digital Hearing aids. United Kingdom: Plural Publishing,

Markides, A (1977).Binaural hearing aids.London: Academic Press Inc.

Sanders, D.A (1993).Management of the hearing handicapped: From infants to elderly.3rd Edn. Englewood Cliffs: Prentice Hall Inc.

Skinner, M.W (1988).Hearing aid evaluation.NJ: Prentice Hall

Stuebaker, G.A & Hochberg, I (1993). Acoustical factors affecting hearing aid performance.2nd Ed. MA: Allyn & Bacon.

Valente, M (1996).Hearing aids: Standards and options.NY: Thieme Medical Publishers Inc

Unit 2

Hull, R.H (1982).Rehabilitative audiology.NY: Grune & Stratton

Levitt, H., Pickett, J.M & Houde, R.A (1980). Sensory aids.NY: John Wiley, Inc.

Robert E. Sandlin (1999). Text book of Hearing aid amplification. Singular Publishing group, Cannada.

Robert E. Sandlin (1993). Understanding digitally programmable hearing aid. MA: Allyn

& Bacon.

Unit 3 Harvey Dillon(2012):Hearing Aids. NY: Thieme Medical Publishers Inc
Lovenbruck, A.M & Madell, I.R (1981).Hearing aid dispensing for audiologists: A guide for clinical service.NY:Grune & Stratton.

Unit 4 Sanders, D.A (1993).Management of the hearing handicapped: From infants to elderly. 3rd Edn. NJ, Englewood Cliffs: Prentice Hall Inc
Schweitzer, H.C (1986). Time – The 3rd dimension of hearing aid performance. Hearing Instruments, 37(1), 17
Studebaker, G.A & Hochberg, I (1993). Acoustical factors affecting hearing aid performance. 2ndEd. MA: Allyn& Bacon.
Valente, M (1996). Hearing aids: Standards and options.NY: Thieme Medical Publishers Inc.

Course 5.4
Pediatric Audiology

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

- Describe auditory development
- 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 pediatric behavioral and physiological/electrophysiological evaluation

Unit 1 **Development of Human Auditory System-12 Hrs**

1.1 Introduction to paediatric audiology and basic terminologies.
1.2 Embryological development of the human auditory and vestibular systems, and the relevance of this information with special reference to syndromes
1.3 Maturation of the auditory nervous system and its relevance in paediatric hearing
1.4 Development of auditory behaviour – prenatal hearing, newborn hearing, auditory development (minimum response level, localization, perception of speech, need for multiple cues).

Unit 2 **Early Identification of Hearing Loss and Hearing Screening-12 Hrs**

2.1 Need for early identification with special reference to conductive and sensorineural hearing loss, mild hearing losses, sloping hearing losses, fluctuating hearing losses and unilateral hearing loss
2.2 Recommendations of the Joint committee on infant screening- various position statements showing its evolution
2.3 High risk registers and its utility in early identification.
- Commonly used high risk registers
- Sensitivity and specificity
- Relevance in Indian scenario

2.4 Universal newborn hearing screening- concept, history, present scenario and hurdles.
2.5 Behavioral screening tests (awakening test, bottle feeding test, behavioral observation audiometry)- stimuli, procedures, recording of response, interpretation of results.
2.6 Objective screening tests (e.g., Crib-OGram, auditory cradle, accelerometer recording system, reflex inhibition audiometry, immittance, reflectometry, wide-band reflectance, OAE, evoked potentials)

2.7 School screening
- Screening for hearing sensitivity- behavioral and objective tests
- Screening for (C)APD- Need, tests used (checklists & behavioral screening tests)

Unit 3 **Diagnostic Evaluations- Behavioural Tests-14 hrs**

3.1 Behaviour observation audiometry

3.2 Conditioning techniques:
- Visual reinforcement audiometry and its modifications including CORA
- PIWI and peep show audiometry
- TROCA
- Play audiometry

3.3 Modifications required for multiple disabilities

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

3.1 Functional hearing loss- signs & symptoms and tests used

3.2 Balance assessment: need, causes, behavioral tests

Unit 4 **Diagnostic Evaluations- Objective tests-14 hrs**

4.1 Immittance evaluation- including high frequency probe-tone tympanometry, reflexometry, wide-band reflectance

4.2 OAEs (TEAOAE & DPOAE)

4.3 Evoked potentials (ABR, ASSR & ALLR)

4.4 Objective tests for vestibular assessment (cVEMP, oVEMP, vHIT, Calorics & tests for central vestibular assessment)

Practicum

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, 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
    - Child referred in screening and has high risk factors in his history
    - Child with chronic middle ear disease
    - Child with CAPD
    - Child with severe bilateral hearing impairment

References

Common

Finitzo, T., Sininger, Y., Brookhouser, P., & Village, E. G. (2007). Year 2007 position statement: Principles and guidelines for early hearing detection and intervention programs. Paediatrics, 120(4), 898–921. http://doi.org/10.1542/peds.2007-2333

Madell, J.R., & Flexer, C. (2008). Paediatric Audiology: Diagnosis, Technology, and Management. Ney York NY: Thieme Medical Publishers.

Northern, J.L. and Downs, M.P. (2014). Hearing in Children. 6th Ed. San Diego: Plural Publishing.

Seewald, R., and Thorpe, A.M. (2011). Comprehensive Handbook of Paediatric Audiology, San Diego: Plural Publishing. (core text book) www.jcih.org

Unit 1

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

Unit 2

Bluestone, C. D., & Klein, J. O. (2007). Otitis media in infants and children, 4th Ed. Italy: BC Decker Inc.

Morgan, S. H. (1998).Universal new born hearing screening.Seminars in hearing.Vol.19(2).

Roush, J. (2001). Screening for hearing loss and otitis media. San Diego, CA: Singular Thomson Learning.

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

Unit 3

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

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

Parthasarathy, T. K. (2006). An introduction to auditory processing disorders in children. New Jersy, USA: Lawrence Erlbaum Associates, Inc.

Roeser, R. J. & Downs, M. P. (2004). Auditory disorders in school children: the law, identification, remediation. 4th Ed. New York, NY: Thieme Medical Publishers, Inc.

Roush, J. (2001). Screening for hearing loss and otitis media. San Diego, CA: Singular Thomson Learning.

Spivak, L. G. (1998). Universal newborn hearing screening. New York, NY: Thieme Medical Publishers, Inc.

McCormick, B. (2004). Paediatric Audiology 0-5 Years, 3rd Ed. London:Whurr Publishers Ltd.

Moog, J. S. & Geers, A. E. (1990).Early speech perception test for the profoundly hearing-impaired children. St. Louis: Central Institute for the Deaf.

Sanders, D. A. (1993).Management of hearing handicap: infants to elderly.3rd Ed. New Jersey; Prentice Hall.

Shoup, A. & Roeser, R. T. (2000). Audiological evaluation in special

population. In R. R. Roser, M. Valente, H. Hosford-Dunn (Eds). Audiological diagnosis. New York: Thieme Medical Publishers,Inc.
Stokes, J. (2000).Hearing impaired infants – support in the first eighteen months. London: Whurr Publishers Ltd.

Unit 4

Beck, D. L., Petrak, M. R., & Bahner, C. L. (2010). Advances in pediatric vestibular diagnosis and rehabilitation.Hearing Review, 17(11), 12-16.
Casselbrant,M. (2013). Vestibular migraine. In: R. C. O'Reilly, T.Morlet, S. L. Cushing, Eds. Manual of Pediatric Balance Disorders. San Diego: Plural Publishing.
Cheatum, B. A., & Hammond A. A. (2000). Physical Activities for Improving Children's Learning and Behavior: A Guide to sensory motor development. Pp. 143-184.
Cushing, C. L., Gordon, K. A., Rutka, J. A., James, A. L., & Papsin, B. C. (2013). Vestibular end-organ dysfunction in children with sensorinerual hearing loss and cochlear implants—An expanded cohort and etiologic assessment. Otology and Neurotology, 34, 422-428.
Desmond A. L. (2011). Vestibular Function: Clinical and Practice Management, 2nd edition. New York: Thieme Medical Publishers, Inc.
Fife, T. D., Tusa, R. J., Furman, J. M., Zee, D. S., Frohman, E. et al. (2000). Assessment: Vestibular testing techniques in adults and children. Neurology, 55(10), 1431-1441.
Gans, R.E. (2014) Evaluation and Management of Vestibular Function in Infants and Children with Hearing Loss, In J. R. Madell & C. Flexer. Pediatric Audiology Diagnosis, Technology and Management, New York: Thieme Medical Publishers, Inc.
Hall III, J. W. & Swanepoel, D. W. (2011). Objective Assessment of Hearing. San Diego: Plural Publishing.
Hall III, J. W. (2006). New Handbook of Auditory Evoked Responses. San Diego: Plural Publishing.
McCormick, B. (2004). Paediatric Audiology 0-5 Years, 3rd Edn. London: Whurr Publishers Ltd.
Melagrana, A., D'Agostino, R., Tarantino, V., Taborelli, G., & Calevo, M. G. (2000). Monothermal air caloric test in children. International Journal of Pediatric Otorhinolaryngology, 62(1), 11-15.
Nandi, R., & Luxon, L. M. (2008). Development and assessment of the vestibular system. International Journal of Audiology, 47, 566-577.
O'Reilly, R. C. et al. (2010). Prevelance of vestibular and balance disorders in children. Otology and Neurotology, 31(9), 1441-1444.
Rine, R. M. (2000). Evaluation and Treatment of Vestibular and Postural Control Deficits in Children, In S. J. Herdman. Vestibular Rehabilitation, Philadelphia:FA Davis.
Szirmai,A. (2010). Vestibular disorders in childhood and adolescents. European Archives of Otorhinolaryngology. published online May 21, 2010.
Valente, L. M. (2011). Assessment techniques for vestibular evaluation in pediatric patients. Otolaryngology Clinics of North America, 44(2), 273-290.
Wiener-Vacher, S. R. (2008). Vestibular disorders in children. International Journal of Audiology, 47, 578-583.

Course 5.5

Clinicals in Speech Language Pathology

General considerations:

- Exposure is primarily aimed to be linked to the theory courses covered in the semester.
- After completion of clinical postings in Speech –language diagnostics, the student will know (concepts), know how (ability to apply), show (demonstrate in a clinical diary/log book based on clinical reports/recordings, etc.), and do (perform on patients/ client contacts) the following:

Know:

1. Procedures to assess speech fluency and its parameters using standardized tests for children and adults.
2. Differential diagnosis of motor speech disorders in children.
3. Procedures to assess individuals with cleft lip and palate, and other oro-facial structural abnormalities.
4. Procedures to assess laryngectomee and provide management options.

Know-how:

1. To administer at least two more (in addition to earlier semesters) standard tests for childhood language disorders.
2. To record a speech sample for analysis of fluency skills (including blocks & its frequency, rate of speech, prosody, etc.).
3. To assess posture and breathing for speech in children with motor speech disorders.
4. To consult with inter-disciplinary medical/rehabilitation team and counsel the individual/family regarding management options and prognosis.

Show:

1. Rating of cleft, speech intelligibility and nasality – minimum of 2 individuals with cleft lip and palate.
2. Language assessment - minimum of 2 individuals with cleft lip and palate.
3. Transcription of speech sample and assessment of percentage dis/dysfluency–minimum of 2 individuals with stuttering.
4. Assessment of rate of speech on various speech tasks – at least on 2 children & adults.

Do:

1. Voice assessment report - minimum of 2 individuals with voice disorders.
2. Fluency assessment report - minimum of 2 individuals with fluency disorders.
3. Oral peripheral examination on minimum of 2 individuals with cleft lip and palate.
4. 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.

Course 5.8 Clinicals in Audiology

General considerations:

- Exposure is primarily aimed to be linked to the theory courses covered in the semester, however, not just limited to these areas.
- After completion of clinical postings in auditory diagnostics and auditory rehabilitation, the student will Know (concept), know how (ability to apply), show (demonstrate in a clinical diary/log book), and do (perform on patients/ client contacts) the following:

Know:

1. Different protocols in tympanometry and reflexometry.
2. Different protocols used in auditory brainstem responses
3. Protocols for screening and diagnostic otoacoustic emissions
4. Tests to assess vestibular system
5. Different indications for selecting implantable hearing devices
6. Various speech stimulation and auditory training techniques

Know-how:

1. To administer auditory brainstem responses for the purpose of threshold estimation and sight of lesion testing
2. To administer high frequency tympanometry and calculate resonance frequency
3. To administer high risk register
4. To modify the given environment to suit the needs of hearing impairment

Show:

1. Analysis of ABR waveforms – threshold estimation 5 and site of lesion 5
2. Analysis of immittance audiometry and relating to other tests – 5 individuals with conductive and 5 individuals with sensori-neural hearing loss
3. How to formulate select appropriate auditory training technique based on audiological evaluation

Do:

1. Threshold estimation on 5 infants (< 2 years)
2. TEOAE and DPOAE on 5 infants (<2 years)
3. BOA on 5 infants (<2 years)
4. VRA on 2 infants (6 month – 3 year)
5. Conditioned play audiometry – 3 children (3-6 years)
6. Hearing aid fitment on 1 infant (< 3 years) 2 children (3-6 years)
7. Listening age of 3 children with hearing impairment
8. Appropriate auditory training on 5 children with hearing loss

Course 5.5 Indian Sign Language

Objectives

After completing the course, the student should be able to:

- Discuss the two manual options with reference to Indian special schools.
- Discuss the relevant issues like literacy, training with reference to manual options.
- Describe manual options in the light of issues like language, culture and identify.

Unit 1: Understanding Deafness and Manual Option in Indian Scenario-08 Hrs

1.1 Basic Awareness of Paradigms of D/Deafness; Communicative challenges / concerns; Deafness with reference to culture, language, identity, minority status, deaf gain, literacy and inclusion

1.2 Difference between Indian Sign Language (ISL) and Indian Sign System (ISS); Myths and facts

1.3 Use of simultaneous communication (Simcom), Use of bilingualism in India: Current scenario, challenges, prerequisites and fulfilling prerequisites

Unit 2: Evaluation and Guidance of Manual Form of Communication in India-08 Hrs

2.1 Monitoring and measuring development of ISL/ ISS in students: Receptive and expressive mode

2.2 Training and guidance for families/teachers for tuning home and mainstream school environments: Current scenario and strategies

2.3 Manual communication: Do's and don'ts

Unit 3: ISL in Daily Communication & Skill Development Challenges-08 Hrs

3.1 Need for 'Motherese' (tuning language to suit young children) and age appropriate

discourse with children with appropriate language,

3.2 Manual form of communication to express suprasegments and emotions

3.3 Measures to be taken to while using manual form of communication in groups.

Unit 4: Method of Teaching ISL and Factors Affecting ISL-06 Hrs

4.1 Methods in teaching ISL for different age groups (such as congenital hearing loss during earlier childhood vs adolescents / adults with acquired hearing loss.

4.2 Challenges in ISL

4.3 Grammatical differences between different spoken Indian languages and ISL.

Course 5.5 Community Based Rehabilitation

Objectives

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

- Explain the concept, principles and scope of community-based rehabilitation.
- Learn the strategies for promoting public participation in CBR.
- Apply suitable methods for preparing persons with disability for rehabilitation within the community.
- Provide need-based training to persons with disabilities.
- Develop an understanding of the role of government and global agencies in CBR.
- Learn about the role of media in enhancing community participation

Unit 1: Introduction to Community Based Rehabilitation (CBR)-08 Hrs

1.1 Concept and Definition of CBR

1.2 Principles of CBR

1.3 Difference between CBR and institutional living
1.4 Socio-cultural and economic contexts of CBR
1.5 Scope and inclusion of CBR in government policies and programs

Unit 2: Preparing Community and Personswith Disability for CBR-06 Hrs

2.1 Awareness program:Types and methods
2.2 Advocacy: Citizen and self
2.3 Focus group discussion
2.4 Community based employment and higher education

Unit 3: Preparing Persons with Disability for CBR-08 Hrs

3.1 Family counselling and family support groups
3.2 CBR and corporate social responsibility
3.3 School education: Person centred planning, and peer group support
3.4 Transition: Individual transition plan, development of self-determination and self-management skills
3.5 Community related vocational training
3.6 Skill Training for living within community

Unit 4: Role of Media in Enhancing Community Participation-08 Hrs

4.1 Mass media and its role in mobilization of community-based rehabilitation
4.2 Strategies for community awareness and participation
4.3 Different modes (print, electronic, audio-visuals, word-of- mouth)
4.4 Effectiveness of each media for different target groups
4.5 Educators' use of mass media for community-based rehabilitation and education

SEMESTER VI

Course 6.1 (DSC)
Motor Speech Disorders in Adults

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

- Understand the characteristics of acquired motor speech disorders in adults
- Evaluate and diagnose speech characteristics in acquired motor speechdisorders
- Learn about the techniques for the management of speech and related errors inacquired motor speech disorders

Unit 1 **Introduction to Motor Speech Disorders in Adults -12 Hrs**

1.1 Dysarthria in adults:

- Definition and different classification systems of dysarthria in adults
- Types of dysarthria in adults and their neurological bases
- Nonspeech and speech characteristics in different types of dysarthria
- Acoustic and physiological findings in different types of dysarthria.

1.2 Apraxia of speech in adults (AOS):

- Definition of verbal and nonverbal apraxia of speech.
- Different types of apraxia in adults and their neurological bases.
- Nonspeech and speech characteristics of AOS.
- Acoustic and physiologic findings in AOS.

1.3 Physiology of normal swallow and its characteristics in different neurological conditions such as ALS, Parkinson's disease, Huntington's disease, multiple sclerosis, apraxia.

Unit 2 **Etiologies of Dysarthria and Apraxia of Speech-12 Hrs**

2.1 Common causes leading to any of the dysarthria and apraxia : Traumatic brain injury (TBI), Cerebrovascular accident (CVA), Infections such as meningitis, encephalitis, and HIV, Neoplasms, Toxic agents.

2.2 Common neurogenic conditions leading to dysarthria

- Flaccid dysarthria: Muscular dystrophy, polymyositis, myasthenia gravis, poliomyelitis, polyneuritis (Guillian-Barre syndrome)
- *Ataxic dysarthria:* Ataxic telangiectasia, Von-Hippel Lindau disease, *Freidrich's ataxia*
- Hypokinetic dysarthria: Parkinson's disease
- Hyperkinetic dysarthria: Tardive dyskinesia, Huntington's and Syndenham's chorea, Meige syndrome, Tourette's syndrome.
- Mixed dysarthria: Motor neurone disease [Amyotrophic multiple sclerosis (ALS), Primary lateral sclerosis (PLS), Progressive bulbar and pseudobulbar palsy], Corticobasal Degeneration (CBD), Wilson's disease, Neurosyphilis.

Unit 3 **Assessment of Dysarthria and Apraxia of Speech-14 Hrs**

3.1 Assessment of dysarthria

- Perceptual analysis – examination of the speech systems during speech and nonspeech (oromotor and orosensory) activities, standard tests and methods, speech intelligibility assessment scales.
- Instrumental analysis-
  - Aerodynamic
  - Electromyographic
  - Kinematic
  - Acoustic

3.2 Advantages and disadvantages of instrumental and perceptual analysis of speech.
3.3 Assessment of apraxia of speech-standard tests and scales, subjective methods and protocols.
3.4 Differential diagnosis of dysarthria from functional articulation disorders, apraxia of speech, aphasia and allied disorders.
3.5 Evaluation of swallowing disorders (Dysphagia)- An overview to subjective and objective methods

Unit 4 **Management of Dysarthria and Apraxia of Speech-14 Hrs**

4.1 Management of dysarthria –
- General intervention principles
- Behavioural approaches (vegetative exercises, oral sensorimotor facilitation techniques, compensatory and facilitatory techniques for the correction of respiratory, phonatory, resonatory, articulatory & prosodic errors)
- Prosthetic and medical (surgical and pharmacological approaches

4.2 Management of apraxia of speech- principles of motor learning, different behavioral management approaches including articulatory kinematic approaches, rate and /or rhythm approaches.
4.3Application of Augmentative and Alternative Communication (AAC) systems for adult dysarthric and apraxic individuals –assessment for AAC candidacy, choosing an appropriate system and technique, training communication partners, generalization of learning and effective use of AAC in adult dysarthrics and apraxics.
4.4 Management of swallowing disorders (Dysphagia) – An overview to rehabilitative and compensatory approaches

Practicum

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

Reference:

Cmmon:

Brookshire, R. H. (2007). Introduction to Neurogenic Communication Disorders. University of Virginia, Mosby.

Duffy, J. R. (2013). Motor Speech Disorders: Substrates, Differential Diagnosis, and Management (3rd Ed.). University of Michigan, Elsevier Mosby.

Ferrand, C. T., & Bloom, R. L. (1997). Introduction to Organic and Neurogenic Disorders of Communication: Current Scope of Practice. US, Allyn & Bacon.

Goldenberg, G. (2013). Apraxia: The Cognitive Side of Motor Control. Oxford University Press, UK.

Lebrun, Y. (1997). From the Brain to the Mouth: Acquired Dysarthria and Dysfluency in Adults. Netherlands, Kluwer Academic Publishers.

Murdoch, B. E. (2010). Acquired Speech and Language Disorders: A Neuroanatomical and Functional Neurological Approach (2nd Ed.). New Delhi, India: John Wiley & Sons.

Papathanasiou, I. (2000) (Eds.). Acquired Neurogenic Communication Disorders – A Clinical Perspective, Chapters 5, 6 & 7. London, Whurr Publishers.

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.

Unit 1

Berry, W.R (1983). *Clinical dysarthria.* San Diego: College Hill Press

Bickerstaff, E.R & Spillane, J.A (1989). *Neurological examination in clinical practice.* Bombay: Oxford University Press.

Corbin-Lewis, k., Liss, M.J. (2015). *Clinical anatomy and physiology of the swallow mechanism.* (3rd Ed). *Stamford: Cengage learning.*

Duffy, J.R. (2013). *Motor speech disorders: Substrates, differential diagnosis and management* (3rd Ed). St.Louis, USA: Elsevier.

Freed, D. (2000). *Motor speech disorders: Diagnosis and management.* Newyork, USA: Delamr cengage learning.

Darby, J.K (Ed) (1981). *Speech evaluation in psychiatry*. New York: Grune& Stratton.

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

Goldenberg, G. (2013). *Apraxia. The cognitive side of motor control.* Oxford: Oxford university press.

Johns, E (Ed) (1989). *Clinical management of neurogenic communication disorders.* London: Bosby Book Publishers.

Kuehn, D.P., Lemme, & Baumgartner (Ed) (1989).*Neural basis of speech, hearing and language*. Boston: College Hill Press.

Logemann, J. A. (1998). *Evaluation and treatment of swallowing disorders* (2nd Ed.). Texas: Pro-ed. An international publisher.

Love, R.J & Webb, W.G (1992).*Neurology for the speech, language pathologist.* Boston: Butterworth-Heinnemann.

McNeil, M et al (Ed) (984).The dysarthrias.San Diego: College Hill Press

McNeil. R. M. (2009). *Clinical management of sensorimotor speech disorders (2nd Ed.).*New York: Thieme Medical Publishers, Inc.

Murdoch, B.E (1990). *Acquired speech and language disorders: A neuroanatomical and functional neurological approach.* London: Chapman &

Hall.
Netsell, R (1986). *A neurologic view of speech production and the dysarthrias.* San Diego: College Hill Press.
Rosenbek, J.C., & Jones, N. H. (2009). *Dysphagia in movement disorders.* San Diego: Plural publishing.
Steefel, J.S. (1981). *Dysphagia rehabilitation for neurologically impaired adults.* Illinios: Charles C Thomas publishers.
Wertz Lapointe&Rosenbek (1988). *Apraxia of speech in adults.* New York: Springer Verlag.
Yorkston, M.K., miller, M.R., Strand, A.E., & Britton, D. (2013). *Management of speech and swallowing disorders in degenerative diseases* (3rd Ed.). Texas: Pro-ed. An International publisher.

Unit 2

Duffy, J.R. (2013). Motor speech disorders: Substrates, differential diagnosis and management (3rd Ed). St.Louis, USA: Elsevier.
Freed, D. (2000). Motor speech disorders: Diagnosis and management. Newyork, USA: Delamr cengage learning.
Dworkin, J.P (1991). Motor speech disorders: A treatment guide. St. Louis: Mosby Year Book.
McNeil, M et al (Ed) (984).The dysarthrias. San Diego: College Hill Press
Murdoch, B.E (1990). Acquired speech and language disorders: A neuroanatomical and functional neurological approach. London: Chapman & Hall.
Netsell, R (1986). A neurologic view of speech production and the dysarthrias. San Diego: College Hill Press.
Wertz Lapointe & Rosenbek (1988). Apraxia of speech in adults. New York: Springer Verlag.
Johns, E (Ed) (1989). Clinical management of neurogenic communication disorders. London: Bosby Book Publishers

Unit 3

Corbin-Lewis, k., Liss, M.J. (2015). Clinical anatomy and physiology of the swallow mechanism. (3rd Ed). Stamford: Cengage learning.Duffy, J.R. (2013). Motor speech disorders:
Duffy, J.R. (2013). Motor speech disorders: Substrates, differential diagnosis and management (3rd Ed). St.Louis, USA: Elsevier.
Freed, D. (2000). Motor speech disorders: Diagnosis and management. Newyork, USA: Delamr cengage learning.
Logemann, J. A. (1998). Evaluation and treatment of swallowing disorders (2nd Ed.). Texas: Pro-ed. An international publisher.
McNeil. R. M. (2009). Clinical management of sensorimotor speech disorders (2nd Ed.).New York: Thieme Medical Publishers, Inc.
Murdoch, B.E (1990). Acquired speech and language disorders: A neuroanatomical and functional neurological approach. London: Chapman & Hall
Rosenbek, J.C., & Jones, N. H. (2009). Dysphagia in movement disorders. San Diego: Plural publishing.
Steefel, J.S. (1981). Dysphagia rehabilitation for neurologically impaired adults. Illinios: Charles C Thomas publishers.
Weismer, G. (2007). Motor speech disorders. California: Plural publishing.
Wertz, Lapointe & Rosenbek (1988). Apraxia of speech in adults. New York: Springer Verlag.
Yorkston, M.K., Beukelman, R.D., Strand, E. A., & Hakel, M. (2010). Management of motor speech disorders in children and adults (3rd Ed.). Texas: Pro-ed. An International Publisher.
Yorkston, M.K., Miller, M.R., Strand, A.E., & Britton, D. (2013). Management of

speech and swallowing disorders in degenerative diseases (3rd Ed.). Texas: Pro-ed. An International publisher.

Unit 4

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

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

Corbin-Lewis, k., Liss, M.J. (2015). Clinical anatomy and physiology of the swallow mechanism. (3rd Ed). Stamford: Cengage learning.

Duffy, J.R. (2013). Motor speech disorders: Substrates, differential diagnosis and management (3rd Ed). St.Louis, USA: Elsevier.

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

Freed, D. (2000). Motor speech disorders: Diagnosis and management. Newyork, USA: Delamr cengage learning.

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

Logemann, J. A. (1998). Evaluation and treatment of swallowing disorders (2nd Ed.). Texas: Pro-ed. An international publisher.

McNeil. R. M. (2009). Clinical management of sensorimotor speech disorders (2nd Ed.).New York: Thieme Medical Publishers, Inc.

Murdoch, B.E (1990). Acquired speech and language disorders: A neuroanatomical and functional neurological approach. London: Chapman & Hall

Rosenbek, J.C., & Jones, N. H. (2009). Dysphagia in movement disorders. San Diego: Plural publishing.

Steefel, J.S. (1981). Dysphagia rehabilitation for neurologically impaired adults. Illinios: Charles C Thomas publishers.

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

Weismer, G. (2007). Motor speech disorders. California: Plural publishing.

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

Yorkston, M.K., Beukelman, R.D., Strand, E. A., & Hakel, M. (2010). Management of motor speech disorders in children and adults (3rd Ed.). Texas: Pro-ed. An International Publisher.

Yorkston, M.K., Miller, M.R., Strand, A.E., & Britton, D. (2013). Management of speech and swallowing disorders in degenerative diseases (3rd Ed.). Texas: Pro-ed. An International publisher.

Course 6.2 Language Disorders in Adults

Objective

After completing the course, the student will be able to

- Understand the characteristics of language disorders in adults
- Evaluate and diagnose speech characteristics in adults with language disorders
- Learn about the techniques for the management of speech and related errors in language disorders seen in adults

Unit 1 **Neurosciences of Adult Language Disorders & Aphasiology-12 Hrs**

1.1 Neuroanatomical, neurophysiological and neurochemical correlates for language function

1.2 Neurolinguistic models and language processes – connectionists, hierarchical, global, process and computational models

1.3 Historical aspects of aphasia

1.4 Definitions, causes, classifications (cortical and subcortical aphasias), approaches to classification systems, types of aphasia- speech, language, behavioral and cognitive characteristics of varieties of aphasia

Unit 2 **Non-Aphasic Language Disorders/ Cognitive Communication Disorders in Adults-12 Hrs**

2.1 A brief overview of Speech, language characteristics in

- TBI (Traumatic Brain Injury)
- RHD (Right Hemisphere Damage)
- Dementia
- PPA (Primary Progressive Aphasia)
- Schizophrenia
- Metabolic disorders
- Alcohol induced disorders

Unit 3 **Assessment of Aphasia and Other Cognitive Communication Disorders -14 Hrs**

3.1 Assessment of cognitive-linguistic behavior of adults with aphasia – Screening, Diagnostic and performance assessment tools (Scoring, interpretation and rationale) –BST, WAB, RTT, BAT, LPT, CLAP, CLQT

3.2 Assessment of speech, language, linguistic and cognitive behavior of adults with Non-aphasic language disorders/ Cognitive communication disorders – MMSE, ABCD, CLAP, CLQT

3.3 Reflections on approaches to assessment in bi/multilingual situation

3.4 Theories of spontaneous recovery and prognostic indicators of aphasia and other cognitive-communication disorders

Unit 4 **Intervention Strategies for Aphasia and Cognitive-Communication Disorders -14 Hrs**

4.1 Principles of language intervention

4.2 Speech-Language Management Approaches- Deblocking, VCIU, LOT, MAAT, PACE, Stimulation Facilitation Approach, RET, VAT, Semantic Feature Analysis, TAP, TUF

4.3 Team approach in rehabilitation of adult language disorders

4.4 Counseling and home management for aphasia and other cognitive-communication disorders

4.5 Rights of persons with aphasia

Practicum

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.
5. Analyse the speech, linguistic and non-linguistic features seen in Right hemisphere damaged individual from a video.
6. In a given brain model mark the subcortical structures involved in language

processing/ production.

7. Demonstrate various facilitatory and compensatory therapy techniques in the management of aphasia.
8. Formulate activities to assess linguistic abilities in dementia and aphasia.
9. Counsel by a role play for a given profile of an individual with adult language disorder.
10. Prepare a counselling checklist /guideline that can be used with the family members of an individual with aphasia and traumatic brain injury.

Reference:

Common:

Brookshire, R. H. (2007). Introduction to Neurogenic Communication Disorders.
University of Virginia, Mosby.

Duffy, J. R. (2013). Motor Speech Disorders: Substrates, Differential Diagnosis, and Management (3rd Ed.). University of Michigan, Elsevier Mosby.

Ferrand, C. T., & Bloom, R. L. (1997). Introduction to Organic and Neurogenic Disorders of Communication: Current Scope of Practice. US, Allyn & Bacon.

Goldenberg, G. (2013). Apraxia: The Cognitive Side of Motor Control. Oxford University Press, UK.

Lebrun, Y. (1997). From the Brain to the Mouth: Acquired Dysarthria and Dysfluency in Adults. Netherlands, Kluwer Academic Publishers.

Murdoch, B. E. (2010). Acquired Speech and Language Disorders: A Neuroanatomical and Functional Neurological Approach (2nd Ed.). New Delhi, India: John Wiley & Sons.

Papathanasiou, I. (2000) (Eds.). Acquired Neurogenic Communication Disorders – A Clinical Perspective, Chapters 5, 6 & 7. London, Whurr Publishers.

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.

Chapey, R. (2008). Language Intervention strategies in aphasia and related neurogenic communication disorders. Philadelphia: Lippincott Williams and Wilkins

Davis, G. A. (2014). Aphasia and related Communication Disorders. Pearson Education Inc.

Edwards, S. (2005). Fluent Aphasia. Cambridge University Press.

Laine, M. & Martin, N. (2006). Anomia: Theoretical and Clinical Aspects.
Psychology Press.

Lapointe, L. L. (2005). Aphasia and related neurogenic language disorders. (3rdEdn.). Thieme.

Lapointe, L. L., Murdoch, B. E., & Stierwalt, J. A. G. (2010). Brain based Communication Disorders. Plural Publishing Inc.

Stemmer, B., & Whitaker, H. A. (Eds.). (2008). Handbook of Neuroscience of Language. Elsevier.

Whitworth, A., Webster, J., & Howard, D. (2005). A cognitive neuropsychological approach to assessment and intervention in aphasia: A clinician's guide. Psychology Press.

Unit 1 Arbib, M. A., Caplan, D & Marshall, J. C. (1982). Neural models of language processes. New York: Academic Press.
Bhatnagar, S. C. (2008). Neuroscience for the study of communicative disorders. Baltimore: Lippincott Williams & Wilkins.
Caplan, D. (1987). Neurolinguistics and linguistic aphasiology: an introduction. Cambridge: Cambridge University Press.
Davis, G. A. (2014). Aphasia and related cognitive communicative disorders. USA: Pearson Education Inc.
Dworkin, J. & Hartman, D. E. (1994). Cases in neurogenic communicative disorders: A workbook. San Diego: Singular Publishing Group Inc.
Head, H. (2014). Aphasia and Kindred disorders of speech. Volume II. Cambridge: Cambridge University Press.
Holmgren, E. & Rudkilde, E. S. (2013). Aphasia: classification, management practices and Prognosis. New York: Nova Sciences Publishing.
Ibanescu, G. & Pescariu, S. (2009). Aphasia: symptoms, diagnosis and treatment. New York: Nova Science Publishers, Inc.
Kuehn, D. P., Lemme, M. L., & Baumgartner, J. M. (1989). Neural bases of speech, hearing and language. Boston: College Hill Press
Lecours, F., Lhermitte, F., & Bryans, B. (1983). Aphasiology. London: Tindall.
Lesser, L. (1989). Linguistic investigations of aphasia. London: Cole & Whurr Ltd.
Manasco, M. H. (2014). Introduction to Neurogenic communication disorders Barlington: Jones and Barlett Learning.
Manasco, M. H. (2014). Introduction to Neurogenic communication disorders. Burlington: Jones and Barlett Learning.
Maruszewski, M. (1975). Language, communication and the brain: A neuropsychological study. Paris: Mounton: The Hague.
Murdoch, B. E. (2010). Acquired Speech and Language disorders- A neuroanatomical and functional neurological approach.UK: John Wiley and Sons.
Petrides, M. (2014). Neuroanatomy of language regions of the human brain. UK: Elsevier.
Rouse, M. H. (2016). Neuroanatomy for Speech Language Pathology & Audiology. Burlington: Jones & Bartlett Learning
Unit 2 Albert, M. L. (1981). Clinical aspects of dysphasia. New York: Sprinber-Verlag.
Davis, A. (1983). A survey of adult aphasia. New Jersey: Prentice Hall.
Davis, G. A. (2014). Aphasia and related cognitive communicative disorders. USA: Pearson Education Inc.
Hegde, M. N. (1986). A course book on aphasia. San Diego: Singular Publishing Group Inc.
Manasco, M. H. (2014). Introduction to Neurogenic communication disorders. Burlington: Jones and Barlett Learning.
McDonald, S. Togher, L. & Code, C. (1999). Communication disorders following traumatic brain injury. UK: Psychology Press.
Murdoch, B. E. (2010). Acquired Speech and Language disorders- A neuroanatomical and functional neurological approach. UK: John Wiley and Sons.
Murray, L. L. & Clark, H. M. (2006). Neurogenic disorders of language. Delmar, USA: Cengage Learning.
Rose, E. (1993). Aphasia. London: Whurr Publishers.
Unit 3 Albert, M. L & Obler, L. K. (1978). The bilingual brain-neuropsychological and neurolinguistic aspects of bilingualism: Perspectives in neurolinguistics and psycholinguistics series. New York: Academic Press.

Burrus, A. E. &Willis, L. B. (2013). Professional communication in speech-language pathology: how to write, talk, and act like a clinician. San Diego. Plural Publishing Inc.
Caplan, D. (1990). Neurolinguistics and linguistic aphasiology. London: Cambridge University Press.
Davis, G. A. (2014). Aphasia and related cognitive communicative disorders. USA: Pearson Education Inc.
Golper, L. A. & Frattali, C. M. (2013). Outcomes in speech-language pathology. USA: Thieme Medical Publishers.
Hegde, M. N. & Freed, D. (2011). Assessment of Communication Disorders in Adults. San Diego: Plural Publishing.
Ibanescu, G. & Pescariu, S. (2009). New York. Aphasia: symptoms, diagnosis and treatment. New York: Nova Science Publishers, Inc.
Kertesz, A. (1979). Aphasia and associated disorders: Anatomy, localization and recovery. New York: Grune & Stratton.

Unit 4

Coe, C. & Muller, D. (1989). Aphasia therapy: Studies in disorders of communication. London: Whurr Publications.
Davis, G. A. (2014). Aphasia and related cognitive communicative disorders. USA: Pearson Education Inc.
Golper, L. A. & Frattali, C. M. (2013). Outcomes in speech-language pathology. USA: Thieme Medical Publishers.
Hegde, M. N. (2006). A Course Book on Aphasia and Other Neurogenic Language Disorders. San Diego: Singular Publishing Company.
Holmgren, E. & Rudkilde, E. S. (2013). Aphasia: classification, management practices and Prognosis. New York: Nova Sciences Publishing.
Ibanescu, G. & Pescariu, S. (2009). New York. Aphasia: symptoms, diagnosis and treatment. New York: Nova Science Publishers, Inc.
LaPointe, L. (1990). Aphasia and related neurogenic language disorders: Current therapy of communication disorders Series editor Perkins. New York: Thieme Pub
Mackie, N. S., King, J. M. & Beukelman, D. R. (2013). Supporting communication for adults with acute and chronic aphasia. Baltimore: Paul H Brookes Publishing.
Martin, N., Thompson, C. K. & Worrall, L. (2008). Aphasia Rehabilitation- the impairment and its consequences. San Diego: Plural Publishing
Roth, F. P. &Worthington, C. K. (2016). Treatment resource manual for speech language pathology. 5th Ed., Delmar, USA: Cengage Learning.

Course 6.3
Environmental Audiology

Objective

After studying the paper the students are expected to realize the following:

- Explain the effects of noise on various systems in the body, with special reference to auditory system.
- Select appropriate test/s and assess the effects of occupational noise.
- Independently assess various kinds of noise in the environment and its possible effects.
- Identify people at-risk of developing occupational hearing loss and plan effective hearing conservation program.
- Assess eligibility for compensation in individuals with NIHL.

Unit 1 **Overview, Types and Effects of Environmental Noise-14 Hrs**

1.1 Definition of noise, sources –community, industrial, music, traffic and others, types – steady and non-steady

1.2 Effects of noise:

Auditory effects of noise exposure: Historical aspects, TTS, factors affecting TTS, recovery patterns, PTS, Histopathological changes, Effect on communication, SIL, AI, Noy, PNdB, PNL, EPNL, NC curves, NRR, SNR. Effects on central auditory processing.

Non-auditory effects of noise exposure: Physiological/somatic including vestibular effects, Psychological responses, stress and health, sleep, audio-analgesia effects on CNS and other senses, effects on work efficiency and performance.

Unit 2 **Audiological Evaluation of Individuals Exposed to Occupational Noise-14Hrs**

2.1 Case history

2.2 Audiometry in NIHL

Pure tone audiometry

- Hearing screening
- Baseline and periodic monitoring tests, brief tone audiometry, correction for presbyacusis
- Testing environment
- Extended high frequency audiometry
- Speech audiometry
- Speech perception tests in quiet and in presence of noise

2.3.Other audiological evaluations: immittance evaluation, AEP, OAE, Tests for susceptibility.

Unit 3 **Noise and Vibration Measurements-12 Hrs**

3.1 Instrumentation

3.2 Procedure for indoor and outdoor measurement of ambient noise, noise survey, traffic noise, aircraft noise, community noise and industrial noise

3.3 Factors affecting noise and vibration measurement

a. Reporting noise measurement including noise mapping.

3.4 DRC – definition, historical aspects, use of TTS and PTS, information in establishing DRC

3.5 CHABA, AFR 160-3, AAOO, damage risk contours, Walsh-Healey Act, OSHA, EPA, Indian noise standards for fire crackers

3.6 Claims for hearing loss: Fletcher point-eight formula, AMA method, AAOO formula, California variation in laws, factors in claim evaluation, variations in laws and regulations, date of injury, evaluation of hearing loss, number of tests

3.7 Indian acts/regulations.

Unit 4 **Hearing Conservation-12 Hrs**

4.1. Need for hearing conservation program

4.2. Steps in hearing conservation program

4.3. Noise control: Engineering and administrative controls

4.4. Hearing protective device (HPDs)

- Types: ear plugs, ear muffs, helmets, special hearing protectors, merits and demerits of each type
- Properties of HPDs: attenuation, comfort, durability, stability, temperature, tolerance
- Outcome measures and evaluation of attenuation characteristics of HPDs

4.5 Noise conditioning/ Toughening

References:

Common:

Behar, A., Chasin M. &Cheesman, N. (2000).Noise controla primer. California: Singular Publishing Group.

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

Le prell, C.G., Henderson, D., Fay, R.R., & Popper, A.N. (2012).*Noise induced hearing loss*. London: Springer.

Crocker, J.M. (2007). *Handbook of Noise and Vibration Control*. New York: John Wiley and Sons.

Bies, D.A. &Hansen, C.H. (2009).*Engineering noise control theory and practice.*Ohio: CRC Press.

Course 6.4

Implantable Hearing Devices and Hearing Aid Fitting

Objective: After studying the paper the students are expected to realize the following:

- Select hearing aids based on pre selection factors and appropriate tests
- Select different assistive listening devices.
- Take ear impression and prepare the ear mould.
- Decide candidacy and select appropriate implantable device
- Trouble shoot hearing aids and counsel.

Unit 1 **Hearing Aid Selection and Fitting-12 Hrs**

1.1 Pre-selection factors

1.2 Selection and programming of linear and non-linear digital hearing aids using prescriptive and comparative procedures

1.3 Verification using functional gain and insertion gain methods

1.4 Use of impedance, OAEs and AEPs

Unit 2 **Hearing Aid Fitting in Different Population, Assistive Listening Devices and Outcome Measures-14 Hrs**

2.1 Hearing aids for conductive hearing loss

2.2 Hearing aids for children

2.3 Hearing aids for elderly

2.4 Outcome measures of Hearing aid benefits

2.5 Assistive listening devices – types and selection

Unit 3 **Implantable Hearing Devices -14 Hrs**

3.1 Middle ear implants Implantable hearing aids- Types components,

- Types, components, surgical approaches, risks, complications, candidacy and contraindications

3.2 Implantable bone conduction devices

- Types, components, surgical approaches, risks, complications, candidacy and contraindications

3.3 Cochlear implants

- Components, terminology, speech coding strategies, candidacy, contra-indications, advantages and complications, Mapping and issues related to CI.

3.4Overview of Brainstem and Midbrain implants

Unit 4 **Mechano-Acoustic Couplers, Counselling and Troubleshooting-12 Hrs**

4.1 Types of ear moulds

4.2 Various procedures of making different types of ear moulds

4.3 Various modifications of ear moulds and its effect on acoustic characteristics

4.4 Counseling on care and Maintenance of ear molds

4.5 Counseling on care, maintenance and troubleshooting of hearing aids and implantable vices

4.6 Troubleshooting of hearing devices

Practicum:

Administer a questionnaire to assess hearing aid benefit on 2 persons usinghearing aids.

1. Carry out a role play activity of counselling a hearing aid user
2. Ear Molds
   - Take impression for the ear mold using different techniques, different methods and using different materials
   - Make hard mold for any 2 ears
   - Make soft mold for any 2 ears
   - Make vent in hard molds you made
3. Watch videos of BAHA, middle ear implant, cochlear implant
4. Create hypothetical cases (at least 5 different cases) who are candidates for cochlear implantation. Make protocol for recording an EABR
5. List down the technological differences across different models of cochlear implants from different companies, their cost
6. Observation of mapping
7. Watching of videos on AVT
8. Watch video on cochlear implant surgery

References

Common

Katz, J (1978, 1985, 1994). Handbook of clinical audiology. 2nd, 3rd& 4th Ed. Baltimore: Williams & Wilkins.

Valente, M., Dunn, H.H & Roeser, R.J (2000). Audiology: Treatment. NY: Thieme.

Unit 1 Hodgson, W.R & Skinner, P.H (1977, 1981). Hearing aid assessment and use in audiologic habilitation. Baltimore: Williams and Wilkins.

Maurer, J.F & Rupp, R.R (1979). Hearing and aging: Tactics for intervention. NY: Grune & Stratton

Mueller, G.H. (2014). Modern Hearing aids (pre fitting testing and selectionhearing aids). UK: Plural Publishing Inc.

Mueller, H.G., Hawkins, D.G. & Northern, J.L (1992). Probe microphone measurements: Hearing aid selection and assessment. California: Singular Publishing Group Inc.

Sandlin, R.E (1994). Understanding digital programmable hearing aids. Boston: Allyn & Bacon.

Studebaker, G.A& Hochberg, I (1993). Acoustical factors affecting hearing aid performance II Edn. MA: Allyn & Bacon.

Taylor & Mueller (2011). Fitting and dispensing hearing aids. UK: Plural Publishing Inc.

Volanthen, A (1995). Hearing instrument for the hearing healthcare professional. NY: Thieme.

Unit 2 Bess, F.H et al. (1981). Amplification in education. Washington: Alexander Graham Bell Association for the Deaf.

Hull, R.H. (1982). Rehabilitative audiology. NY: Grune & Stratton.

Mueller, H.G., Hawkins, D.B & Northern, J.L (1992). Probe microphone measurements: Hearing aid selection and assessment. California: Singular Publishing Group Inc.

Sanders, D.A (1993). Management of the hearing handicapped: From infants to elderly. III Ed. Prentice Hall Inc

Valente, M (1994). Strategies for selecting and verifying hearing and fittings. NY: Thieme.

Unit 3 Cooper, H (1991). Cochlear implants: A practical guide. London: Whurr Publishers

Gauri Mankekar (2014). Implantable hearing devices other than cochlear implants. NY: Springer Publishers.

Michael J. Ruckenstein (2012). Cochlear Implants and Other Implantable Hearing Devices

Niparko, J.K., Kirk, K.I., Mellon, N.K., Robbins, A.M., Tucci, D.L. & Wilson, B.S (2000). Cochlear implants: Principles and practices. Philadelphia: Lippincott Williams & Wilkins.

Owens, E. & Kessler, D.K (1989). Cochlear implants in young def children. Boston: College Hill Publication.

Tyler, R.S (1995). Cochlear implants: Audiological foundations. New Delhi: AITBS Publishers

Valente, M., Dunn, H.H & Roeser, R.J (2000). Audiology: Treatment. NY: Thieme

Waltzman, S.B & Cohen, N.L (2000). Cochlear implants. NY: Thieme.

Unit 4 Armbruster, J.M & Miller, M.H (1981). How to get the most out of your hearing aid. Association for the Deaf. Baltimore: Williams & Wilkins.

Bess, F.H. et al. (1981). Amplification in education. Washington: Alexander Graham Bell.

Berlin, I.C (1996). Hair cells and hearing ids. California: Singular Publishing

Group Inc.
Clark, J.G & Martin, F.N (1994). Effective counseling in audiology: Perspectives and practice.
Dillon, H. (2012) Hearing Aids. NY: Thieme.
Gawinski, M.J (1991). Transducer damage: A practical guide to prevention. Hearing Journal, Grune & Stratton.
Loavenbruck, A.M & Madell, I.R (1981). Hearing aid dispensing for audiologists.
Maurer, J.F & Rupp, R.R (1979). Hearing and ageing: Tactics for intervention. NY.
Pollack, M.C (1980). Amplification for the hearing impaired. NY: Grune & Stratton
Studebaker, G.A & Hochberg, I (1993). Acoustical factors affecting hearing aid performance. II Ed. MA: Allyn & Bacon.
Taylor & Mueller (2011). Fitting and dispensing hearing aids. UK: Plural Publishing Inc.
Valente, M., Dunn, H.H & Roeser, R.J (2000). Audiology: Treatment. NY: Thieme

Course 6.5
Clinical (Speech-Language Pathology)

General considerations:

- Exposure is primarily aimed to be linked to the theory courses covered in the semester.
- After completion of clinical postings in Speech–language diagnostics, the student will know (concepts), know how (ability to apply), show (demonstrate in a clinical diary/log book based on clinical reports/recordings, etc.), and do (perform on patients/ client contacts) the following:

Know:

1. Procedures to assess motor speech disorders in adults.
2. Differential diagnosis of motor speech disorders in adults.
3. Procedures to assess individuals with adult language disorders, and other related abnormalities.

Know-how:

1. To administer at least two standard tests for adult language disorders.
2. To administer at least two standard tests/protocols for motor speech disorders in adults.
3. To record a sample for analysis of language and speech skills in adults with neurocommunication disorders.
4. To assess posture, breathing, speech and swallowing in adults with motor speech disorders.

5. To consult with inter-disciplinary medical/rehabilitation team and counsel the individual/family regarding management options and prognosis.

Show:

1. Language assessment - minimum of 2 individuals after stroke.
2. Associated problems in individuals after stroke and its evaluation.
3. Dysphagia assessment – minimum of 2 children & adults.
4. Goals and activities for therapy (including AAC) based on assessment/test results for adults with neuro-communication disorders.

Do:

1. Voice therapy - Minimum of 2 individuals with voice disorders.
2. Fluency therapy - Minimum of 2 individuals with fluency disorders.
3. Bed side evaluation of individuals with neuro-communication disorders – Minimum of 2 individuals.
4. 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.

Course 6.6 Clinicals in Audiology

General considerations:

- Exposure is primarily aimed to be linked to the theory courses covered in the semester, however, not just limited to these areas.
- After completion of clinical postings in auditory diagnostics and auditory rehabilitation, the student will Know (concept), know how (ability to apply), show (demonstrate in a clinical diary/log book), and do (perform on patients/ client contacts) the following:

Know:

1. National and international standards related to noise exposure.
2. Recommend appropriate treatment options such as speech reading, AVT, combined approaches etc.

Know-how:

1. To carryout noise survey in Industry and community
2. To carryout mapping of cochlear implant in infants and children using bothobjective and subjective procedures
3. To trouble shoot cochlear implant

Show:

1. Analysis of objective responses like compound action potential, stapedial reflexes on at least 3 samples
2. Comprehensive hearing conservation program for at least 1 situation

Do:

1. AVT on at least 1 child with hearing impairment
2. Trouble shooting and fine tuning of hearing aids on at least 5 geriatric clients
3. At least one activity for different stages involved in auditory training

Course 6.5
Speech-Language Pathology and Audiology in Practice

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

- List and describe the highlights of legislations relating to speech and hearingdisabilities
- Incorporate ethical practices in professional activities.
- Provide information on the facilities available for the speech and hearingdisabled including welfare measures and policies of government.
- Describe different strategies to create awareness of speech and hearing impairment and facilities available to take care of them.
- Familiarizing different clinical setups for the rehabilitation of speech and hearing disorders, with reference to their requirement, protocols and role andresponsibility of the professionals.
- Familiarizing terminology, technology and methods used in public education,clinical practice including tele practice and camps.
- And their application in speech and hearing service delivery.
-

Unit 1 **Introduction to the Speech –Language Pathology and Audiology in Practice-12 Hrs**

1.1 Epidemiology of speech and hearing disorders
1.2 Need for rehabilitation and steps involved in rehabilitation.
1.3 ICD and ICF
1.4 Levels of prevention: Primary, secondary and tertiary
1.5 National programs and efforts by the professionals including India in the process of rehabilitation.
1.6 Organizing camps, screening (need, purpose, planning, organizing and conducting including providing remedial measures to the needy)
1.7 Public education and information (media, radio broadcasts, street plays)

1.8 Functions of speech & hearing centers in different set-ups
1.9 Private practice, evidence based practice
1.10 Government organizations, NGOs
1.11 Role of itinerant speech therapist, anganwadis, resource teachers etc.
1.12 Community based rehabilitation and other methods of integration of the disabled in the society.

Unit 2 **Public Laws Related to Disability-14 Hrs**

2.1 Scope of practice in speech and hearing (National & International bodies)
2.2 Professional ethics
2.3 Rehabilitation Council of India and Disability related acts in India
2.4 Consumer protection Act and other public laws.
2.5 Disability related Acts pertaining to Education and welfare of persons with disability in International perspective-UNCRPD.
2.6 Welfare measures available for persons with speech language and hearing disability
2.7 Certification of persons with speech language and hearing disability
2.8 Concept of barrier free access and universal design relating to individuals with speech and hearing impairment

Unit 3 **Organization and Administration of Speech-Language and Hearing Centers and Public Education-14 Hrs**

3.1 Setting up a speech-language and hearing center
3.2 Organization of space, time, personnel and audiometric rooms.
3.3 Budgeting and, financial management
3.4 Purchase formalities
3.5 Recruiting personnel – rules and salary
3.6 Leave rules and other benefits for professionals and personnel
3.7 Documents and record keeping – different types
3.8 Public education methods
3.9 Organizing workshops, seminars and conferences.

Unit 4 **Scope and Practice of Tele-Assessment & -Rehabilitation-12 Hrs**

4.1 Introduction to tele-health: definition, history of tele-health
4.2 Terminologies-tele-health, tele medicine, tele practice
4.3 Connectivity: internet, satellite, mobile data
4.4 Methods of tele-practice-store and forward and real time
4.5 Ethics and Regulations for tele practice
4.6 Requirements/Technology for tele- practice: Web based platforms, Video conferencing, infrastructure
4.7 Manpower at remote end and speech-language partologist/audiologist end, training assistants for tele-practice
4.8 Audiological screening using tele-technology: new born hearing screening, school screening, community screening, counselling.
4.9 Diagnostic services using tele-technology: video otoscopy, pure tone audiometry, speech audiometry, oto acoustic emission, tympanometry, auditory brainstem response.

Practicum

1. Attend camps, seminars, workshops, conferences, school screening, community based screening.
2. Undertake the activities such as ‘Dangerous decibel” program (www.dangerousdecibels.org)
3. Visit an speech pathologist/audiologist in different practice settings and provide

a report

4. Administer ICF protocols for patients with different disorders
5. Explore websites of various institutions, hearing aid companies, NGOs working with disabled and describe the accessibility features and information provided
6. Develop one pamphlet/poster/ in local language that would address some aspect of speech and hearing practice.
7. Perform accessibility ability of your institute/center and prepare a report

References

Common

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.

Bergland, B., Lindwall, T., Schwela, D.H., eds (1999). Guidelines on Community Noise http://www.who.int/docstore/peh/noise/guidelines2.html WHO 1999

BIS specifications relating to Noise Measurements.- IS:7194-1973 Specification for assessment of noise exposure during work for hearing conservation purposes.

Census of India information on disability

Dobie, R. A (2001). Medical legal evaluation of hearing loss, 2nd Ed.

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-Issues/Audiology-Assistants/Teleaudiology- Clinical Assistants/ http://www.asha.org/uploadedFiles/ModRegTelepractice.pdf

IS:10399-1982 Methods for measurement of noise emitted by Stationary vehicles

IS:6229-1980 Method for measurement of real-ear

IS:9167-1979 Specification for ear protectors.

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.

IS:9989-1981 Assessment of noise with respect to community response.

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

SEMESTER VII & VIII

Course 7 & 8 (SEC)

Clinicals in Speech Language Pathology

General considerations:

Clinical internship aims to provide clinical exposure and experience in different set ups. The students would not only carry out greater quantum of work, but also work varied clinical populations and in different contexts. Internship will provide greater opportunity for the students to liaise with professionals from allied fields. The intern is expected to demonstrate competence and independence in carrying out the following, among others:

General:

1. Diagnosis and management of speech, language, and swallowing disorders acrosslife span.
2. Report evaluation findings, counsel and make appropriate referrals.
3. Plan and execute intervention and rehabilitation programs for persons with speechlanguage, communication, and swallowing disorders
4. Develop and maintain records related to persons with speech-language,communication, and swallowing disorders
5. Engage in community related services such as camps, awareness programsspecifically, 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 centers indifferent 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 theirfamilies.
10. Advise and fit appropriate aids and devices for their clinical population.

Course 7 & 8 (SEC)
Clinicals in Audiology

General considerations:

Clinical internship aims to provide clinical exposure and experience in different set ups. The students would not only carry out greater quantum of work, but also work varied clinical

populations and in different contexts. Internship will provide greater opportunity for the students to liaise with professionals from allied fields. The intern is expected to demonstrate competence and independence in carrying out the following, among others:

General:

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