SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH
(A Deemed to be University Declared under Section 3 of UGC Act, 1956)
Comprising Sri DevarajUrs Medical College
[Constituent Unit of Sri DevarajUrs Educational Trust for Backward Classes (Regd.)]
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CHOICE BASED CREDIT SYSTEM
(CBCS)

(With effect from 2020-2021 batches)

Curriculum for Bachelor in Audiology and Speech- Language Pathology (S.ASLP) Programme

Dean
Faculty of Allied Health Sciences
Sri Devaraj Urs Academy of
Higher Education & Research
Tamaka, Kolar-563 101

Approved as per AC-33-2019, (Resolution No-AC/XXXIII-23/19) Dated-14-06-2019

Curriculum Framework

Bachelor in Audiology and Speech–Language Pathology (B.ASLP)

Four Years Duration

Norms and Guidelines
Course Content

Effective from Academic Session 2019-20

Sri Devaraj Urs Academy of Higher Education & Research
Deemed to be University
Tamaka, Kolar 563101, Karnataka

Department of Speech Pathology & Audiology

Sri Devaraj Urs Academy of Higher Education & Research
Deemed to be University Tamaka,
Kolar 563101, Karnataka

Regulations

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4-year B.ASLP program at SDUAHER

2019 - 20

Contents

Regulations governing the 4-year B.ASLP program at SDUAHER

1.0 Short Title and Commencement

These regulations shall be called "The regulations governing the 4-year Bachelor in Audiology and Speech-Language Pathology" at the Sri Devaraj Urs Academy of Higher Education & Research, Tamaka, Kolar. These regulations shall come into force from the academic year 2019-20.

2.0 Nomenclature

As per UGC notification of 2014, the nomenclature of the program shall be "Bachelor in Audiology and Speech-Language Pathology". B.ASLP is the short form.

3.0 Objectives of the B.ASLP Program

The objectives of the B.ASLP program are to equip the students with knowledge and skills to

- function as audiologists and speech-language pathologists in different work settings,
- understand concepts pertaining to speech, language, communication, hearing and disability,
- screen, evaluate, diagnose and assess the severity of different disorders related to speech, language, swallowing and hearing,
- manage speech, language, swallowing and hearing disorders in persons across life span,
- counsel persons with communication disorders and their family members,
- rehabilitate persons with speech, language, swallowing and hearing disorders,
- promote early identification and prevention of speech, language, swallowing and hearing disorders,
- liaise with professionals in allied fields and other stake holders,
- implement public awareness and education program, and
- to undertake advocacy initiatives on behalf of and for persons with speech, language and hearing disorders.

4.0 Definition of Key Words

a) Academic year: Two consecutive (one odd + one even) semesters shall constitute one academic year.

b) Course: Usually referred to as 'papers'. All courses do not carry the same weight. A course may be designed to comprise lectures/ tutorials/ laboratory work/ field work/ outreach activities/ project work/ vocational training/ viva/ seminars/ term papers/ assignments/ presentations/ self-study / clinical work or a combination of some of these.

c) Choice Based Credit System (CBCS): The CBCS provides choice for students to select from the prescribed courses (core, elective or soft skill courses).

d) Credit Point: It is the product of grade point and number of credits for a course.

e) Credit: A unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) per week. However, number of hours of clinical / practical work required to earn one credit may vary from semester to semester.

f) Cumulative Grade Point Average (CGPA): It is a measure of cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to two decimal places.

g) Grade Point: It is a numerical weight allotted to each letter grade on a 10-point scale.

h) Letter Grade: It is an index of the performance of students in a said course. Grades are denoted by letters O, A++, A+, A, B+, B, F and Ab.

i) Program: Any educational program that leads to award of a degree

j) Semester Grade Point Average (SGPA): It is a measure of performance of work done in a semester. It is ratio of total credit points secured by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.

k) Semester: Each semester will consist of 15-20 weeks of academic work equivalent to 90 or 120 actual teaching days. The odd semester may be scheduled from July to December and even semester from January to June.

l) Transcript or grade card or certificate: Based on the performance of the students in the stipulated exams, a marks card shall be issued to all the registered students after every semester. The marks card shows the marks scored in each paper of the semester along with the final result. A grade certificate which shows the grades earned along with course details (code, title, number of credits, grade secured), SGPA of each semester and CGPA can also be issued to all the candidates at the end of the 4-year program on payment of a prescribed fee.

m) Types of courses (papers): Different courses of study are labeled and defined as follows:

i) DSC: Discipline Specific Core course

ii) AEC: Ability Enhancement Courses may be of two types:

a) AECC: Ability enhancement compulsory course that leads to knowledge enhancement

b) SEC: Skill enhancement courses are value- and/or skill-based that provide hands-on-training, competencies, skills, etc.

iii) DSE: Discipline specific elective courses are generally interdisciplinary in nature

iv) GE: Generic elective courses are generally from an unrelated discipline/subject and are included to provide exposure beyond the core discipline/subject.

The word 'elective' is used only to be in conformity with UGC nomenclature, but all courses (papers) under this program are compulsory.

n) University: University refers to Sri Devaraj Urs Academy of Higher Education & Research, Tamaka, Kolar which is a Deemed to be University (Declared under Section 3 of the UGC Act, 1956).

5.0 Duration of the Program

5.1 The program shall be of 4 academic years including 1 year of internship (2 semesters) and should be completed within six years from the date of admission.

5.2 The odd semesters 1, 3, 5, and 7 shall be from July to December while the even semesters 2, 4, 6, and 8 shall be from January to June of the year. Time structure of the program shall be as follows:

15 weeks / Semester in semesters 1 to 6	
20 weeks / Semester in 7 and 8	
6 days / week	90 to 120 days / semester
7 hours / day	630 - 840 hours per semester
Semesters 1 to 6	90 days / 630 hours per semester
Semesters 7 & 8	120 days / 840 hours per semester
Total program	5460 hours

5.3 There shall be examination at the end of each semester. There shall be vacation of minimum 1 week after the examinations at the end of odd semesters and 3 weeks after the examinations at the end of even semesters. Preparatory holidays before exams can also be granted depending on the clinical work at the department.

5.4 Semesters 7 and 8 together constitute the internship year during which time the candidates may be posted in any speech and hearing or related institution including the parent institution. The candidates shall abide by the internship program rules of the University

6.0 Medium of Instruction

Medium of instruction is English and examinations shall be in English.

7.0 Eligibility for Admission

7.1 The candidates applying for admission to B.ASLP program should have passed 10+2 examination of the Pre University Board of Education of the State of Karnataka or any other equivalent examination conducted by institutions established by state / central government securing a minimum of 50% marks. Relaxation in the qualifying marks shall be as per rules and regulations of the state of Karnataka or Central government.

7.2 The applicant/candidate should have studied Physics, Chemistry, Biology and any one of Mathematics / Computer Science / Statistics / Electronics / Psychology in their qualifying examination.

7.3 Applicants shall not be older than 25 years on the 1st July of the year of admission.

8.0 B.ASLP degree program structure (choice based credit system)

8.1 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 Lecture + Tutorial + Practical. A given course may have all these three components or only some of them. The credit pattern of the course is indicated as L:T:P where

L stands for lecture session consisting of formal lectures in a classroom

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, and

P stands for practicum or clinical which would work with persons with communication disorders in clinical and other setups such as hospitals/ clinics/ outreach centers.

8.2 The details of courses and number of hours that constitute one credit in respect of lectures, clinicals and tutorials are shown in the table below:

Semester 1

Paper Code	Type	Title of the Course	Credits	L:T:P	Hours/ Week
B 1.1	DSC	Communication Sciences Part A: Speech-language Pathology Part B: Audiology	 2 2	 2:0:0 2:0:0	 2:0:0=2 2:0:0=2
B 1.2	AECC	Part A: Anatomy of Speech & Hearing Part B: Physiology of Speech & Hearing	2 2	2:0:0 2:0:0	2:0:0=2 2:0:0=2
B 1.3	AECC	Clinical Psychology	4	4:0:0	4:0:0=4
B 1.4	AECC	Linguistics and Phonetics	4	4:0:0	4:0:0=4
B 1.5	GE	English	0	0:0:0	3:0:0=3
B 1.6	GE	Indian Constitution / Basics in Computer Applications	0	0:0:0	1:0:0=1
B 1.7	SEC	Clinicals (Speech-language Pathology)	4	0:1:3	0:2:6=8
B 1.8	SEC	Clinicals (Audiology)	4	0:1:3	0:2:6=8
			24		36

Semester 2

Paper Code	Type	Title of the Course	Credits	L:T:P	Hours/ Week
B 2.1	AECC	Neurology	3	3:0:0	3:0:0=3
B 2.2	AECC	Otolaryngology	3	3:0:0	3:0:0=3
B 2.3	DSC	Speech-Language Pathology	4	4:0:0	4:0:0=4
B 2.4	DSC	Audiology	4	4:0:0	4:0:0=4
B 2.5	AECC	Electronics and Acoustics	3	3:0:0	3:0:0=3
B 2.6	DSE	Indian Music / Yoga	0	0:0:0	2:0:0=2
B 2.7	GE	Environmental Studies	0	0:0:0	1:0:0=1
B 2.8	SEC	Clinicals (Speech-language Pathology)	4	0:1:3	0:2:6=8
B 2.9	SEC	Clinicals (Audiology)	4	0:1:3	0:2:6=8
			25		36

Semester 3

Paper Code	Type	Title of the Course	Credits	L:T:P	Hours/ Week
B 3.1	DSC	Voice and its Disorders	4	4:0:0	4:0:0=4
B 3.2	DSC	Speech Sound Disorders	4	4:0:0	4:0:0=4
B 3.3	DSC	Diagnostic Audiology - Behavioral Tests	4	4:0:0	4:0:0=4
B 3.4	DSC	Amplification Devices	4	4:0:0	4:0:0=4
B 3.5	DSE	Part A: Pediatrics Part B: Genetics	1 1	1:0:0 1:0:0	1:0:0=1 1:0:0=1
B 3.6	GE	Indian Constitution / Basics in Computer Applications	0	0:0:0	1:0:0=1

B 3.7	SEC	Clinicals (Speech-language Pathology)	4	0:1:3	0:2:6=8
B 3.8	SEC	Clinicals (Audiology)	4	0:1:3	0:2:6=8
			26		35

Semester 4

Paper Code	Type	Title of the Course	Credits	L:T:P	Hours/ Week
B 4.1	DSC	Fluency and its Disorders	4	4:0:0	4:0:0=4
B 4.2	DSC	Language Disorders in Children	4	4:0:0	4:0:0=4
B 4.3	DSC	Diagnostic Audiology: Physiological Tests	4	4:0:0	4:0:0=4
B 4.4	DSC	Implantable Hearing Devices	4	4:0:0	4:0:0=4
B 4.5	AECC	Research Methods & Statistics	4	4:0:0	4:0:0=4
B 4.6	DSE	Community Based Rehabilitation / Indian Sign Language	1	1:0:0	1:0:0=1
B 4.7	SEC	Clinicals (Speech-language Pathology)	4	0:1:3	0:2:6=8
B 4.8	SEC	Clinicals (Audiology)	4	0:1:3	0:2:6=8
			29		37

Semester 5

Paper Code	Type	Title of the Course	Credits	L:T:P	Hours/ Week
B 5.1	DSC	Motor Speech Disorders in children	4	4:0:0	4:0:0=4
B 5.2	DSC	Structural Anomalies and Speech Disorders	4	4:0:0	4:0:0=4
B 5.3	DSC	Pediatric Audiology	4	4:0:0	4:0:0=4
B 5.4	DSC	Educational Audiology	4	4:0:0	4:0:0=4
B 5.5	DSE	Clinical Counselling	2	2:0:0	2:0:0=2
B 5.6	SEC	Clinicals (Speech-language Pathology)	4	0:1:3	0:2:6=8
B 5.7	SEC	Clinicals (Audiology)	4	0:1:3	0:2:6=8
			26		34

Semester 6

Paper Code	Type	Title of the Course	Credits	L:T:P	Hours/ Week
B 6.1	DSC	Motor Speech Disorders in Adults	4	4:0:0	4:0:0=4
B 6.2	DSC	Language Disorders in Adults	4	4:0:0	4:0:0=4
B 6.3	DSC	Environmental Audiology	4	4:0:0	4:0:0=4
B 6.4	DSC	Aural Rehabilitation	4	4:0:0	4:0:0=4
B 6.5	AECC	Speech-language Pathology & Audiology in Practice	3	3:0:0	3:0:0=3

B 6.6	DSE	Indian Music / Yoga	0	0:0:0	2:0:0=2
B 6.7	DSE	Community Based Rehabilitation / Indian Sign Language	1	1:0:0	1:0:0=1
B 6.8	SEC	Clinicals (Speech-language Pathology)	4	0:1:3	0:2:6=8
B 6.7	SEC	Clinicals (Audiology)	4	0:1:3	0:2:6=8
			28		38

Semester 7

Paper Code	Type	Title of the Course	Credits	L:T:P	Hours/ Week
7.1	SEC	Internship: Speech-language Pathology (Internal / External)	8	0:1:7	0:2:14=16
7.2	SEC	Internship: Audiology (Internal / External)	8	0:1:7	0:2:14=16
			16		32

Semester 8

Paper Code	Type	Title of the Course	Credits	L:T:P	Hours/ Week
8.1	SEC	Internship: Speech-language Pathology (Internal / External)	8	0:1:7	0:2:14=16
8.2	SEC	Internship: Audiology (Internal / External)	8	0:1:7	0:2:14=16
			16		32
Credits for all the semesters			190		

- As per RCI regulations, the four GE courses, i.e. Indian constitution, basics in computer applications, environmental studies, and English are not part of the B.ASLP program. Credits for these courses shall not be printed in the final marks card and shall not be considered in the computation of SGPA or CGPA. However, students have to pass in these papers, as certified by the faculty teaching these courses to be able to go forward.

- If a course of any type is selected once by a candidate, the same course cannot be selected again by the same candidate in another semester.

- The students of B.ASLP program are also engaged in clinical conference, journal club, workshops, seminars, conferences and camps/screening programs.

9.0 Attendance

9.1 Each course/subject shall be taken as a unit for calculating attendance

9.2 Minimum attendance shall be 80% in each of the theory papers and 90% in Clinical / Practicals in each semester to be eligible to appear for examination at the end of each semester.

9.3 A candidate who does not satisfy the requirement of attendance in any paper/subject shall not be eligible to take examination of the concerned course for that semester. Such students have to repeat that course when offered in the immediate subsequent year (this facility shall be available only for two times in the entire program).

9.4 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 and before the commencement of the next semester. The candidate is permitted to avail this facility in semesters 1, 3 and 5 only, with prior permission from the Head of the Institution.

9.5 Condonation of shortage of attendance to an extent of 10% in each theory paper, in genuine cases, shall be from the Vice-Chancellor of the University on payment of a fee.

10.0 Examination

10.1 A student must earn all 190 credits for successful completion of the B.ASLP program.

10.2 The University shall constitute a Board of Examiners (BOE) with the head of the department of Speech Pathology & Audiology as Chairman. There shall be another 6 to 10 members, with external and internal members in such proportion as the HoD deems appropriate, in the Board. HoD, Speech Pathology & Audiology shall recommend names to the University for inclusion in the BOE.

10.3 The Chairman, Board of Examiners is authorized to invite any other examiner(s) - internal or external - depending on the number of papers to be evaluated, specialization, availability, willingness of the examiners etc.

10.4 The Chairman of BOE shall get a minimum of 3 sets of question papers and answer keys for all the papers in a given semester. As far as possible, setting of question papers and evaluation of answer scripts of different subjects shall be carried out by the members of the Board.

10.5 The Chairman of BOE shall decide on the examiners to set question papers, evaluate answer scripts and to conduct clinical exams. Normally, the same examiner(s) who set the question paper shall also evaluate the answer scripts.

10.6 A new BOE shall be constituted for each semester with its constitution as described under 10.1 above.

10.7 The pattern of question paper is shown in Appendix 1

11.0 Papers and Examination Pattern

11.1 The examination pattern, distribution of papers and marks, in different semesters, shall be as shown in 13 to 15

11.2 Course content shall be as in Annexure 2

Semester 1

No.	Title of the course	IA		Exam	Total
		C1	C2		
B 1.1	Communication Sciences Part A: Speech-language Pathology Part B: Audiology	 5 5	 5 5	 40 40	 50 50
B 1.2	Part A: Anatomy of Speech & Hearing Part B: Physiology of Speech & Hearing	5 5	5 5	40 40	50 50
B 1.3	Clinical Psychology	10	10	80	100
B 1.4	Linguistics and Phonetics	10	10	80	100
B 1.5	English	--	--	--	--
B 1.6	Indian Constitution / Basics of Computer Applications	--	--	--	--
B 1.7	Clinicals (Speech-language Pathology)	10	10	80	100
B 1.8	Clinicals (Audiology)	10	10	80	100
		60	60	480	600

Semester 2

No.	Title of the course	IA		Exam	Total
		C1	C2		
B 2.1	Neurology	10	10	80	100
B 2.2	Otolaryngology	10	10	80	100
B 2.3	Speech-Language Pathology	10	10	80	100
B 2.4	Audiology	10	10	80	100
B 2.5	Electronics and Acoustics	10	10	80	100

B 2.6	Indian Music / Yoga	--	--	--	--
B 2.7	Environmental Studies	--	--	--	--
B 2.8	Clinicals (Speech-language Pathology)	10	10	80	100
B 2.9	Clinicals (Audiology)	10	10	80	100
		70	70	560	700

Semester 3

No.	Title of the course	IA		Exam	Total
		C1	C2		
B 3.1	Voice and its Disorders	10	10	80	100
B 3.2	Speech Sound Disorders	10	10	80	100
B 3.3	Diagnostic Audiology: Behavioral Tests	10	10	80	100
B 3.4	Amplification Devices	10	10	80	100
B 3.5	Part A: Pediatrics Part B: Genetics	5 5	- -	20 20	25 25
B 3.6	Indian Constitution / Basics of Computer Applications	--	--	--	--
B 3.7	Clinicals (Speech-language Pathology)	10	10	80	100
B 3.8	Clinicals in (Audiology)	10	10	80	100
		70	60	520	650

Semester 4

No.	Title of the course	IA		Exam	Total
		C1	C2		
B 4.1	Fluency and its Disorders	10	10	80	100
B 4.2	Language Disorders in Children	10	10	80	100
B 4.3	Diagnostic Audiology: Physiological Tests	10	10	80	100
B 4.4	Implantable Hearing Devices	10	10	80	100
B 4.5	Research Methods and Statistics	10	10	80	100
B 4.6	Community Based Rehabilitation / Indian Sign Language	5	5	40	50
B 4.7	Clinicals (Speech-language Pathology)	10	10	80	100
B 4.8	Clinicals (Audiology)	10	10	80	100
		75	75	600	750

Semester 5

No.	Title of the course	IA		Exam	Total
		C1	C2		
B 5.1	Motor Speech Disorders in Children	10	10	80	100

B 5.2	Structural Anomalies and Speech Disorders	10	10	80	100
B 5.3	Pediatric Audiology	10	10	80	100
B 5.4	Educational Audiology	10	10	80	100
B 5.5	Clinical Counselling	5	5	40	50
B 5.6	Clinicals (Speech-language Pathology)	10	10	80	100
B 5.7	Clinicals (Audiology)	10	10	80	100
		65	65	520	650

Semester 6

No.	Title of the course	IA		Exam	Total
		C1	C2		
B 6.1	Motor Speech Disorders in Adults	10	10	80	100
B 6.2	Language Disorders in Adults	10	10	80	100
B 6.3	Environmental Audiology	10	10	80	100
B 6.4	Aural Rehabilitation	10	10	80	100
B 6.5	Speech-language Pathology & Audiology in Practice	10	10	80	100
B 6.6	Indian Music / Yoga	--	--	--	--
B 6.7	Community Based Rehabilitation / Indian Sign Language	5	5	40	50
B 6.8	Clinicals (Speech-language Pathology)	10	10	80	100
B 6.9	Clinicals (Audiology)	10	10	80	100
		75	75	600	750

Semester 7

No.	Title of the course	IA	Exam	Total
B 7.1	Internship: Clinicals in Speech-language Pathology (Internal / External)	25	75	100
B 7.2	Internship: Clinicals in Audiology (Internal / External)	25	75	100
		50	150	200

Semester 8

No.	Title of the course	IA	Exam	Total
B 8.1	Internship: Clinicals in Speech-language Pathology (Internal / External)	25	75	100
B 8.2	Internship: Clinicals in Audiology (Internal / External)	25	75	100
		50	150	200

Examination Summary

Semester	IA		Exam	Total
	C1	C2		
Semester 1	60	60	480	600
Semester 2	70	70	560	700
Semester 3	65	65	520	650
Semester 4	75	75	600	750
Semester 5	65	65	520	650
Semester 6	75	75	600	750
Semester 7	50	00	150	200
Semester 8	50	00	150	200
	510	410	3580	4500

11.3 There shall be examination at the end of each semester (Semesters 1 to 6, and clinical exams at the end of semesters 7 & 8) as per the calendar notified by the University.

11.4 Duration of examination for theory papers carrying 80 marks, with 3 or more credits, shall be 3 hours. Duration of the examination for theory papers of less than 80 marks and/or less than 3 credits shall be 2 hours.

11.5 Components C1 and C2 are essentially internal assessments. The two components, C1 and C2, will be for 10% each. C1 must be completed by the 8th 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 15th week of the semester.

11.6 A minimum of fifty percent of the papers in each semester shall be evaluated by external examiners. Internal examiners shall evaluate the remaining.

11.7 No reevaluation, or photocopying is permissible.

11.8 Clinical exams at the end of odd semesters shall be by two internal examiners while those at the end of even semesters shall be by two external examiners. An internal faculty member may assist the external examiners, but shall not give marks.

11.9 Students shall be assessed for clinical skill repertoire, planning of assessment & management procedures, preparation & maintenance of clinical documents (test protocols, diary, lesson plans and progress report), efficient use of time/skills, clinical competence and professional attitude/motivation/ aptitude for clinical work. In clinicals, while the examination at the end of odd semesters can be based on viva, group discussion, practical work etc., examination at the end of even semesters shall be based on the students working with clinical population

(one patient) followed by viva voce. Clinical examination by external examiners shall include work with cases (45 minutes for each student) followed by a viva (15 minutes).

11.10 Clinical marks, under components C1 and C2 shall be awarded by all the internal faculty of the department in all the semesters as specified. In case of external posting during internship, the program coordinator of the external institution shall award marks under C1 and C2.

11.11 Performance in at least one written test and one group assignment shall be the basis for awarding marks under components C1 and C2 in respect of theory papers.

12.0 Criteria for a Pass

12.1 Passing Criterion: A student must score a minimum of 40% in each of the internal assessments (C1 and C2) to appear for the final theory examination. A student is considered to have passed the course, only on securing a minimum of 50% from C1, C2 and final exam put together (subject/course aggregate). In case a student secures less than 40% in the final theory exam or absents himself, then he/she is deemed to have failed in the paper/course. Such students can complete the course by reappearing only for the final component for the course when University conducts the examination. The student carries the marks already awarded for C1 and C2.

12.2 Students will not be able to appear for University theory exam if they do not pass in their clinical examination. Students have to pass the clinical examination of the given semester to proceed to the next semester.

13.0 Carry-over of papers

13.1 Each paper should be successfully completed within 3 attempts including the first one.

13.2 Students can start internship after the 6^{th} semester exams. However, students who fail in their clinical exam of 6^{th} semester will have to discontinue internship.

14.0 Computations of SGPA and CGPA

14.1 The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses and the sum of the number of credits of all the courses undergone and earned by a student, that is,

$$SGPA\ (Si) = \sum(Ci \times Gi) / \sum Ci$$

where Ci is the number of credits of the i^{th} course and Gi is the grade point scored by the student in the i^{th} course.

14.2 The CGPA is calculated taking into account all the courses undergone and successfully completed by a student in each of the 8 semesters, that is,

$$CGPA = \sum(Ci \times Si) / \sum Ci$$

where Si is the SGPA of the i^{th} semester and Ci is the total number of credits in that semester.

14.3 The SGPA and CGPA shall be rounded off to 2 decimal points.

15.0 Declaration of Class and Rank

15.1 Class and rank shall be declared on the basis of grades, grade points, and equivalence of marks as shown in the table below:

% of Marks	Grade Point	SGPA / CGPA	Letter grade	Class
90+	10	9.00 to 10.00	O (Outstanding)	Distinction
80+	9	8.00 to < 9.00	A++ (Excellent)	Distinction
75+	8.5	7.50 to < 8.00	A+ (Very Good)	Distinction
70+	8	7.00 to < 7.5	A (Very Good)	First class
60+	7	6.00 to < 7.00	B+ (Good)	First class
50 +	6	5.00 to < 6.00	B (Above Average)	Second Class
<50	0	<5.00	F (Fail)	Fail
	0		Ab (Absent)	Fail

15.2 Among the students who have passed all the examinations in the first attempt itself in all the semesters, three students scoring the highest aggregate marks or scoring the highest CGPA at the end of all the 8 semesters shall be assigned a corresponding 'Rank'

16.0 Letter Grades and Grade Points

16.1 The program shall follow absolute grading system in which marks obtained are converted to grades based on pre-determined class intervals. The program adopts the UGC recommended system of grades, grade points, letter grades etc. with some changes to reflect the requirement of the present program to keep minimum marks for a pass at 50%. The letter grades and the grade points shall be as shown under section 16.2 below.

16.2 Grades, Grade Points and equivalence of marks: Percentage to grade conversion shall be as shown in Table below:

Letter grade	Percentage of Marks	Grade Point
O (Outstanding)	90 & above	10
A++ (Excellent)	80 & above	9
A+ (Very Good)	75 & above	8.5
A (Very Good)	70 & above	8
B+ (Good)	60 & above	7
B (Above Average)	50 & above	6
F (Fail)	Less than 50	0
Ab (Absent)		0

16.3 Accordingly, a student has to obtain a grade point of 6 to pass the examination. Students getting SGPA of 7 and above shall be declared to have passed the examination in first class and those getting an SGPA of 8.5 and above shall be declared to have passed the examination in distinction provided they have passed all their examinations in the first attempt itself. Students getting grade point of <6 are deemed to have failed the examination and shall take the examination again when offered in the subsequent odd / even semester.

17.0 Grace Marks

A maximum of 5 (five) marks may be awarded, at the discretion of the University, to a student who has failed in only one theory paper but has passed in all other papers. Grace marks shall not be awarded for C1 and C2 components of internal assessment or clinical examinations.

18.0 Clinical Internship

All candidates shall complete a clinical internship of one academic year (2 semesters) after successful completion of the 6th semester. Students awaiting results of the 6th semester can start internship. The rules and regulations of clinical internship shall be as in Annexure 3.

19.0 Award of Degree

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

20.0 Simultaneous Study

Under no circumstances, a student will be permitted to simultaneously pursue another program of study, at any level, and at any institution while enrolled for this B.ASLP program. If any student is found to have enrolled in any other program, in contravention of this rule, either at the same institution or elsewhere, then he/she will be dismissed from this B.ASLP program.

21.0 Resolution of Problems

The decision of the Vice-chancellor of the university is final and binding in the interpretation of these rules and regulations. Similarly, on all other issues not mentioned in these rules and regulations, the decision of the Vice-chancellor of the University shall be final and binding.

Vice-Chancellor
Sri Devaraj Urs Academy of Higher Education & Research
Deemed to be University
Tamaka, Kolar

Annexure 1

Sample Question Paper
B.ASLP (All semesters)

Course Title: …… Max. Marks: 80
Course Code……. Duration: 3 hrs.

Unit No.	Question Number	Question/s	Marks
Unit 1	1(a)	A xxxxxxxxxxxxxxxxxxxx	8
	(b)	B xxxxxxxxxxxxxxxxxxxx	8
		OR	
	2 (a)	C xxxxxxxxxxxxxxxxxxxx	8
	(b)	D xxxxxxxxxxxxxxxxxxxx	8
Unit 2	3(a)	E xxxxxxxxxxxxxxxxxxxx	8
	(b)	F xxxxxxxxxxxxxxxxxxxx	8
		OR	
	4(a)	G xxxxxxxxxxxxxxxxxxxx	8
	(b)	H xxxxxxxxxxxxxxxxxxxx	8
Unit 3	5(a)	I xxxxxxxxxxxxxxxxxxxx	8
	(b)	J xxxxxxxxxxxxxxxxxxxx	8
		OR	
	6(a)	K xxxxxxxxxxxxxxxxxxxx	8
	(b)	L xxxxxxxxxxxxxxxxxxxx	8
Unit 4	7(a)	M xxxxxxxxxxxxxxxxxxxx	8
	(b)	N xxxxxxxxxxxxxxxxxxxx	8
		OR	
	8(a)	O xxxxxxxxxxxxxxxxxxxx	8
	(b)	P xxxxxxxxxxxxxxxxxxxx	8
Unit 5	9 (a)	Q xxxxxxxxxxxxxxxxxxxx	8
	(b)	R xxxxxxxxxxxxxxxxxxxx	8
		OR	
	10 (a)	S xxxxxxxxxxxxxxxxxxxx	8
	(b)	T xxxxxxxxxxxxxxxxxxxx	8

Sample Question Paper: Max marks 80
B.ASLP (for courses with Part A and Part B)

Course Title: …… Max. Marks: 80
Course Code……. Duration: 3 hrs.

Pattern for Part A as well as Part B

Unit No.	Question Number	Question/s	Marks
Unit 1	1	A xxxxxxxxxxxxxxxxxxxx	10
		OR	
	2	B xxxxxxxxxxxxxxxxxxxx	10
Unit 2	3	C xxxxxxxxxxxxxxxxxxxx	10
		OR	
	4	D xxxxxxxxxxxxxxxxxxxx	10
Unit 3	5	E xxxxxxxxxxxxxxxxxxxx	10
		OR	
	6	F xxxxxxxxxxxxxxxxxxxx	10
Unit 4	7	G xxxxxxxxxxxxxxxxxxxx	10
		OR	
	8	H xxxxxxxxxxxxxxxxxxxx	10

Sample Question Paper: Max Marks 40
B.ASLP (for courses with Part A and Part B)

Course Title: …… Max. Marks: 40
Course Code……. Duration: 1.5 hrs.

Pattern for Part A as well as Part B

Unit No.	Question Number	Question/s	Marks
Unit 1	1	A xxxxxxxxxxxxxxxxxxxx	10
		OR	
	2	B xxxxxxxxxxxxxxxxxxxx	10
Unit 2	3	C xxxxxxxxxxxxxxxxxxxx	5
		OR	
	4	D xxxxxxxxxxxxxxxxxxxx	5
Unit 2	5	E xxxxxxxxxxxxxxxxxxxx	5
		OR	
	6	F xxxxxxxxxxxxxxxxxxxx	5

Annexure 2

Course Content of the 4-year B.ASLP program at SDUAHER

Semester 1

B 1.1 Communication Sciences

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

a) basic concepts of speech, hearing, language and communication, and
b) basic concepts of hearing sensitivity and acoustics

Part A: Speech-language Pathology

Hours 30 Marks 50: Credits 2

Unit 1: Speech, language and communication

a) Definition of speech, language, communication, and their components
b) Functions of communication, speech and language
c) Basic models of speech communication
d) Speech as an overlaid function
e) Speech chain
f) Bases of speech and language – anatomical, physiological, neurological, physical, aerodynamic, linguistic, psychological and socio-cultural and genetic

Unit 2: Normal development of speech-language

a) Normal development of speech-language
b) Development of fluency and prosody
c) Development of voice
d) Development of articulation
e) Pre-requisites and factors affecting speech-language development

Unit 3: Introduction to speech-language pathology and swallowing disorders

a) Fluency disorders – stuttering, cluttering, neurogenic stuttering and psychogenic stuttering
b) Voice disorders – based on pitch, loudness, and quality of voice
c) Phonological disorders – misarticulation, apraxia, and dysarthria
d) Language disorders – aphasia in children and adults, cerebral palsy, specific language impairment, hearing impairment, autism spectrum disorders, learning disability, and intellectual disability
e) Feeding and swallowing disorders
f) Causes of speech-language disorders

Unit 4: History and development of speech-language pathology

a) Historical development of the field of speech-language pathology
b) Development of speech and language pathology in the Indian context
c) Scope of practice in speech-language pathology
d) Interdisciplinary nature of speech-language pathology

Part B: Audiology

Hours 30 Marks 50: Credits 2

Unit 1: Introduction to audiology

a) History of Audiology, development of instrumentation in audiology
b) Development of the field of audiology: Indian and global context
c) Branches of audiology
d) Scope of audiology

Unit 2: Sound intensity and concept of decibel

a) Acoustic energy and power, absolute and relative units – importance of reference
b) Sound intensity and intensity levels –absolute and relative measurements
c) Bel and decibels, sound pressure and decibel sound pressure levels, relationship between intensity and pressure
d) Characteristics and application of decibels

Unit 3: Audibility and hearing

a) Hearing range –intensity and frequency
b) Up-down and staircase procedure of estimating minimum audible levels
c) Minimum audible pressure and field, missing six dB and related issues
d) Reference equivalent threshold sound pressure levels and hearing levels
e) Sensation levels, threshold of pain, most comfortable levels

Unit 4: Differential sensitivity

a) Concept of differential sensitivity, just noticeable difference
b) Weber's fraction
c) Intensity discrimination
d) Frequency discrimination
e) Duration discrimination and temporal resolution
f) Applications of jnd's
g) Magnitude estimation and production
h) Loudness – equal loudness level contours and its application
i) Loudness scales - sone, phone, Steven's power law
j) Pitch- scales of pitch

Recommended reading

- Borden, 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.
- 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.
- Khara L. Pence, T., Laura M. & Justice (2011). Language Development: From Theory to Practice (2nd Ed.), Communication Sciences and Disorders. Allyn & Bacon
- Webb, W. G., & Adler, R. K. (2008). Neurology for the speech-language pathologist (5th ed.). St. Louis, Mo: Mosby/Elsevier

B 1.2 Anatomy and Physiology of Speech and Hearing

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

a) describe the embryonic development of speech and hearing structures
b) describe the anatomy of the auditory system as well as the speech mechanism
c) describe the physiology of hearing and speech production including voice
d) decipher the functioning of speech and swallowing mechanism,
e) explain the anatomy and function of the vestibular system

Part A: Anatomy of Speech and Hearing Systems

Hours 30 Marks 50: Credits 2

Unit 1: General anatomy and embryology

a) Anatomical terms, anatomical positions and planes of reference
b) Cells and tissues of the body
c) Basic terminologies related to embryology
d) Development of external, middle, inner ear and the auditory system
e) Development of larynx and respiratory structures
f) Development of facial region including tongue, teeth and palate
g) Five examples of embryonic anomalies affecting speech-language and hearing

Unit 2: Anatomy of speech production system and swallowing

a) Anatomy of the respiratory structures including larynx and thoracic cavity
b) Anatomy of pharynx and esophagus
c) Structure of different articulators and their associated structures
d) Structures of the resonatory mechanism

Unit 3: Anatomy of external and middle ear

a) Anatomical study of the external ear
b) Anatomy of the temporal bone
c) Anatomy of middle ear, tympanic membrane, ossicles and muscles
d) Structure of the Eustachian tube

Unit 4: Anatomy of labyrinth

a) Anatomy of the bony and membranous labyrinth
b) Micro and macro anatomy of cochlea
c) Innervation and blood supply to cochlea
d) Anatomy of the central auditory pathway

Part B: Physiology of Speech and Hearing Systems

Hours 30 Marks 50: Credits 2

Unit 1: General Physiology

a) Functions of cell
b) Properties and functions of different types of tissues
c) Molecular basis of muscle contraction – isotonic and isometric types of contraction
d) Basics of neurophysiology – Neuron, nerve conduction, afferent and efferent pathways, synapse
e) Resting membrane potential and nerve action potential

Unit 2: Physiology of speech production system and swallowing

a) Breathing, speech breathing and posture
b) Role of larynx in speech production
c) Mechanism of phonation
d) Role of articulators and their associated structures in speech production
e) Resonatory mechanisms and their contribution to speech production
f) Swallowing mechanism

Unit 3: Physiology of external and middle ear

a) Role of the external ear in hearing including localization
b) Head shadow effect, inter-aural intensity and time differences
c) Middle ear transformer action
d) Functions of the middle ear ossicles and muscles
e) Physiology of Eustachian tube

Unit 4: Physiology of labyrinth

a) Physiology of the bony and membranous labyrinth
b) Functioning of cochlea
c) Electrical potentials of the cochlea
d) Theories of air and bone conduction hearing
e) Functioning of balancing mechanism
f) Physiology of central auditory pathway

Recommended reading

- Seikel, J. A., King, D. W., & Drumright, D. G. (2010). Anatomy & Physiology of Speech, Language, and Hearing. 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. ISBN 81-239-1157-2.
- Kelley, M., Wu, D., & Fay, R. R. (Eds.). (2005). Development of the Inner Ear (2005 edition.). New York: Springer.

B 1.3 Clinical Psychology

Hours 60 Marks 100 : Credits 4

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

a) scope of clinical psychology and its significance for speech and hearing
b) concept of normality, abnormality and classification of abnormal behavior
c) cognitive, motor, emotional and social development
d) theories of learning and therapy techniques based on learning principles
e) neuropsychological assessment and rehabilitation
f) application of neuropsychology in the field of speech and hearing, and
g) the basics of counseling

Unit 1: Introduction to psychology

a) Introduction to psychology: definition, history and schools of psychology
b) Scope and meaning of clinical psychology
c) Historical development, modern clinical psychology
d) Significance of clinical psychology in health sciences
e) Role of clinical psychology in speech and hearing
f) Concept of normality and abnormality
g) Models of mental disorders: biological, psychological social models

Unit 2: Assessment procedures in clinical psychology

a) Methods in clinical psychology: case history, clinical interviewing, clinical observation, definition and types of psychological testing
b) Assessment of cognitive functions
c) Adaptive functions,
d) Personality
e) Behavioral assessment
f) Classification of abnormal behavior: history, need & rationale of classification
g) Current classificatory system: DSM, ICD

Unit 3: Developmental psychology

a) Child and developmental psychology: meaning, definition and scope
b) Meaning of growth, development & maturation
c) Principles of child development
d) Motor development: general principles, stages in motor development - early motor development, development during later childhood and adolescence, decline with age
f) Cognitive development: early childhood to adolescence
g) Piaget's theory of cognitive development
h) Emotional development
i) Social development

Unit 4: Principles of learning and behavior modification

a) Learning: meaning, definition and characteristics
b) Theories of learning: introduction
c) Pavlov's classical conditioning: experiments and principles
d) Skinner's operant conditioning: experiments and principles
e) Therapeutic techniques based on learning principles
f) Skill behavior techniques
g) Problem behavior techniques

Unit 5: Neuropsychology and its relevance to study of speech

a) Neuropsychology: introduction and definition
b) Neuropsychological assessment
c) Neuropsychological rehabilitation
d) Application of neuropsychology in the field of speech and hearing
e) Counseling: introduction and definition
f) Types of counseling: directive and non- directive
g) Characteristics of a good counselor

Recommended reading

- 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.
- Hurlock, E.B. (1981). Child development. (VI Ed.). Mc Graw Hill International Book
- Kline, P. (1993). The Handbook of Psychological Testing. Routledge
- Lezak, M., Loring, D.W., and Hannay, H.J. (2004). Neuropsychological Assessment. Fourth Edition. New York: Oxford University Press
- Siegal M.G. (Ed). (1987). Psychological Testing from Early Childhood Through Adolescence. International Universities Press.

B 1.4 Linguistics and Phonetics

Hours 60 Marks 100 : Credits 4

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

a) different branches and aspects of linguistics
b) characteristics and functions of language
c) different branches of phonetics, applied linguistics, and phonology
d) morphology, syntax, semantics, pragmatics
e) acquisition of language and factors affecting it, and
f) bi/multilingualism and related issues

Unit 1: Linguistics

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

Unit 2: Phonetics and phonology

a) Introduction to phonetics
b) Articulatory, acoustic, auditory and experimental phonetics – an introduction
c) Articulatory classification of sounds – segmental and supra-segmental
d) Classification description and recognition of vowels and consonants
e) Pathological aspects of speech sound production
f) Transcription systems with special emphasis on IPA. Transcription of samples of normal and disordered speech
g) Introduction to phonology, classification of speech sounds on the basis of distinctive features and phonotactics
h) Application of distinctive feature theory to speech pathology and speech therapy, phonotactics, phonotactic patterns of English and Indian languages
i) Phonemic analysis – principles and practices; their practical implications for speech pathologists
j) Common phonological processes - assimilation, dissimilation, metathesis, haplology, epenthesis, spoonerism, vowel harmony, nasalization, neutralization

Unit 3: Morphology, syntax, semantics and applied linguistics

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

Unit 4: Language acquisition

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

Unit 5: Bi/multilingualism

a) Introduction to the language families of the world and India
b) Issues related to second language acquisition and factors influencing it
c) Inter-language theory, language transfer and linguistic interference
d) Differences between first and second language acquisition/learning
e) Bilingualism/Multilingualism
f) Metaphonology

g) Writing systems – types of writing
h) History of writing systems
i) Indian writing systems

Recommended reading

- Ball & Martin (1995). Phonetics for speech pathology. Delhi: AITBS Publishes
- Ball, Rahilly & Tench (1996). The phonetic transcription of disordered speech. San Diego: Singular Publishing Group Inc.
- 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
- Ladefoged, P. (1982). A course in phonetics. NY: Harcourt Brace Jovanorich Inc.
- Shriberg & Kent (1982). Clinical phonetics. New York: John Wiley & Sons.

B 1.5 English

Hours 45 No exam : No credits

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

a) understand the nuances of English grammar,
b) develop vocabulary, particularly scientific
b) speak better English
c) understand the spoken and written English, and
e) analyze logic and interpret quasi-scientific writings

There is no text book or reference material. The emphasis of the course is on enabling the students to speak and understand English better. The material would be newspaper writings, essay writing, scientific writings etc.

B 1.6 Indian Constitution

Hours 15 No exam : No credits

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

a) the basic structure of our constitution,
b) the role of different constitutional and other functionaries,
c) the nature of the republic of India.

Unit 1: Indian constitution and human rights

a) Meaning and importance of constitution
b) Making of Indian Constitution
c) Salient Features and the preamble

Unit 2: Fundamentals

a) Fundamental rights
b) Fundamental duties
c) Directive principles

Unit 3: Union government

a) Parliamentary affairs
b) Constitutional authorities
c) The executive and the Union ministry
d) The judiciary of the country

Unit 4: Major functionaries

a) Union public service commission
b) Election commission
c) NITI Aayog
d) Reserve Bank of India
e) Investigative bodies

Unit 5: The Republic

a) States and Union territories
b) Governor
c) State legislative bodies
d) Law making powers of the state governments
e) Major functionaries of the states

Recommended reading

- The Indian constitution
- Relevant notifications of the central and state governments
- Gazette notifications of Indian government

B 1.6 Basics of Computer Applications

Hours 15 No exam : No credits

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

a) identify the basic systems in a computer,
b) use Windows 10 operating system
c) use computers for data storage, retrieval and analysis, and
d) to use internet for data transmission and reception.

Unit 1: Introduction to computers

a) Introduction, types of computer, components of computer, CPU, motherboard
b) Primary storage devices: ROM, RAM, secondary storage: floppy, hard disk and their types, CDROM, pen drive
c) Input & output devices: keyboard, mouse, scanner
d) Display units, liquid crystal display projector
e) Printers (dot matrix, inkjet & laser)
f) Multimedia components, modems and network interfacing card

Unit 2: Windows operating system

a) Introduction, loading and starting windows
b) Concept of plug and play, active desktop environment
c) Control panel, adding new programs and hardware
d) Menus, folders, shortcuts, display properties
e) System tools, multimedia programs
f) Editing pictures using paint

Unit 3: MS-Office, MS-Excel

a) MS-Word: Introduction to MS-office, installing and removing word, running programs and Managing files, opening, creating and saving documents
b) Templates, navigating and selecting, editing and sorting, checking spelling and grammar, formatting
c) Importing graphics and pictures, tables, long documents
d) Sharing data with other users, security
e) Creating and working with web pages, mail merge, editing equations, printing
f) MS-Excel - working with workbooks and worksheets, spreadsheets, entering data and selecting cells, editing and formatting worksheets, mathematical functions, statistical functions, trigonometric functions, date and time functions, text functions, financial functions, lookup and reference functions, creation of charts and graphs, automated tasks, macros, switching from other applications, printing

Unit 4: MS- Power point and MS-Access

a) MS-Power Point: Introduction, auto-content wizard, design templates, adding and formatting text, making notes and handouts, adding clip arts, drawings and other objects, equations, tables and charts, controlling the slide show, animations, printing presentations and slides

b) MS-Access: Introduction, databases, data structures, creating tables, importing and linking tables, working with data, working with queries, creating forms and reports, writing expressions, working with macros, modules and events, replication, data access objects, data access methods and properties

Unit 5: Internet

a) Introduction, LAN and WAN, dial-up and broadband networking
b) Internet protocols, TCP/IP protocol
c) Microsoft internet explorer, Netscape navigator, properties and customization
d) World wide web, HTML
e) Creation of web page using templates
f) Search engines, chatting, e -mail

Recommended reading

• Rajaraman, V. (1992). Fundamental of computers. New Delhi: Prentice Hall of India.

B 1.7 Clinicals (Speech-language Pathology)

Hours 120 Marks 100 : Credits 4

Practical

1) Study the available normative data (Indian/Western) of language such as phonology, semantics, syntax, morphology and pragmatic measures.
2) Perceptual analysis of speech and language parameters in normal (2 children and 2 adults) 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 techniques for various 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/pamphlets relating to speech-language pathology, public education of communication and hearing disorders, etc.
8) Prepare a report on the available clinical facilities and clinical activities of the institute.

Clinical Practicum

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

B 1.8 Clinicals (Audiology)

Hours 120 Marks 100 : Credits 4

Perform the following experiments

a) Calculate the relative intensities with different reference intensities.
b) Calculate decibels when sound intensities are doubled, increased by 4 times
c) Add decibels when two sounds with different intensities are produced simultaneously
d) Collect pictures of audiometers that existed between 1920 and 1990.
e) Measure most comfortable level on 10 participants with normal hearing sensitivity.
f) Measure uncomfortable levels on 10 participants with normal hearing sensitivity.
g) Calculate the sensation levels of MCL and UCLs in above 10 participants.
h) Measure difference limen of intensity, frequency and duration on 10 normal hearing adults and plot it in graphical form and interpret the results.
i) Measure equal loudness level contours at minimum level, 40 dB SPL, 70 dB SPL (1 kHz) in 5 normal hearing adults.
j) Measure sone and mel in 5 normal hearing adults using scaling techniques
k) Calculate reference equivalent sound pressure levels (RETSPL) for head phones and bone vibrator for any two frequencies using 30 participants.
l) Observe the pure tone audiometry being carried out on 30 clients.

Semester 2

B 2.1 Neurology

Hours 45 Marks 100 : Credits 3

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

a) basic concepts, functional anatomy and physiology of nervous system related to speech and hearing
b) neural organization – different structures and functions of various systems
c) neurosensory and neuromotor controls in speech, language and hearing mechanisms
d) cerebral plasticity and dominance and its relevance for speech, language and hearing disorders
e) various neural diseases, lesions, nutritional and metabolic conditions affecting speech, language and hearing
f) basic principles and assessment procedures used in speech, language and hearing disorders associated with neurological conditions, and
g) basic principles and management procedures used in speech, language and hearing disorders associated with neurological conditions

Unit 1: Functional anatomy of the nervous system

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

Unit 2: Neurophysiology of speech and hearing processes

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

Unit 3: Neural disorders associated with speech and hearing disorders - I

a) Neural infections – meningitis, encephalitis
b) Developmental anomalies – spinal cord defects, syringomalacia and bulbia, Arnold Chiari malformations
c) Hydrocephalus – source and circulation of CSF, types and etiopathogenesis
d) UMN lesions –spastic dysarthria
e) LMN lesions –flaccid dysarthria
f) Mixed lesions
g) Extra pyramidal lesions – dyskinetic dysarthria
h) Cerebellum and cerebellar pathway lesions – ataxic dysarthria
i) Other diverse lesions and dysarthria

Unit 4: Neural disorders associated with speech and hearing disorders - II

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

Unit 5: Speech-language and swallowing disorders

a) Central language mechanism and its disorders
b) Developmental motor speech disorders – cerebral palsy, muscular dystrophy
c) Neurologic disorders with primitive reflexes, diagnosis and management
d) Clinical neurological syndromes associated with speech and language disorders
e) Childhood language disorders associated with neurologic disorders
f) Dysphagia in neurogenic disorders and assessment of mastication and deglutition
g) Agnosia and other conditions associated with speech and hearing disorders
h) Cognitive disorders associated with neurologic disorders
i) General management principles and options for childhood neurogenic speech, language and hearing disorders
j) General management principles and options for adult neurogenic speech, language and hearing disorders

Recommended reading

- Adams, R.D. & Sidman, R.L. (1968). Introduction to neuropathology. New Jersey: McGraw-Hill.
- Bhatnagar, S.C. (2012). Neuroscience for the Study of Communicative Disorders. Lippincott, Williams & Wilkins
- Garden, E. (1968). Fundamental of neurology, V Edn., Philadelphia: Sarenders co.
- 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.

B 2.2 Otolaryngology

Hours 45 Marks 100 : Credits 3

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

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

Unit 1: External and middle ear and their disorders

a) Clinical anatomy of the ear
b) Congenital anomalies
c) Diseases of the external ear
d) Tumors of the external ear
e) Perforation and ruptures of tympanic membrane
f) Eustachian tube dysfunction
g) Otitis media with effusion
h) Cholesteatoma and chronic suppurative otitis media
i) Otosclerosis
j) Trauma to temporal bone
k) Facial nerve and its disorder

Unit 2: Inner ear and its disorders

a) Congenital anomalies
b) Meniere's Disorder
c) Ototoxicity
d) Presbycusis
e) Disorders of vestibular system
f) Vestibular Schwannoma
g) Tinnitus and medical line of treatment
h) Pre-surgical medical and radiological evaluations for implantable hearing devices
i) Overview of surgical technique for restoration and preservation of hearing
j) Post-surgical care and complication of surgery for cochlear implants
k) Overview of surgical technique, post-surgical care and complication of surgeries for implantable bone conducted hearing aids and middle ear implant

Unit 3: Oral cavity and its disorders

a) Anatomy of the oral cavity
b) Common disorders of the oral cavity
c) Tumors of the oral cavity
d) Cleft lip and palate – medical aspects

e) Clinical anatomy and physiology of pharynx
f) Inflammatory conditions of the pharynx, tonsils and adenoids
g) Tumors of the pharynx

Unit 4: Larynx and its disorders

a) Clinical anatomy of larynx
b) Difference between adult and infant larynx
c) Clinical examination of larynx
d) Stroboscopy - technique, procedure, interpretation and precautions
e) Congenital laryngeal pathologies
f) Inflammatory conditions of the larynx
g) Vocal nodule and other disorders of the vocal folds
h) Benign and malignant tumors of the larynx
i) Laryngectomy – overview of surgical procedure
j) Phonosurgery and other voice restoration surgeries

Unit 5: Esophagus and its disorders

a) Clinical anatomy and physiology of esophagus
b) Clinical examination of esophagus
c) Congenital anomalies of esophagus
d) Esophageal fistula
e) Inflammatory conditions of esophagus
f) Benign conditions of esophagus
g) Malignant conditions of the esophagus
h) Airway management procedures

Recommended reading

- 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

B 2.3 Speech-language Pathology

Hours 60 Marks 100 : Credits 4

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

a) different speech and language disorders
b) basic concepts and tools required for diagnosing speech and language disorders
c) basics of assessment procedures for speech and language disorders
d) basic principles and intervention procedures for speech and language disorders
e) clinical requirements to practice,
f) different laws, social-cultural and ethical issues
g) identification and prevention of speech and language disorders, and
h) basic principles of providing counseling and guidance to clients and caregivers

Unit 1: Basic concepts and methods of diagnostics

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

Unit 2: Basic concepts and methods of therapeutics

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

Unit 3: Assessment and management of speech disorders

a) Causes of speech disorders
b) Overview of assessment procedures for voice disorders; articulation and phonological disorders; and fluency disorders
c) Overview of management procedures for voice disorders; articulation and phonological disorders; and fluency disorders
d) Early identification and prevention of speech disorders
e) Basic concepts in assessment and management of swallowing disorders

Unit 4: Assessment and management of language disorders

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

Unit 5: Issues in clinical practice as a speech - language pathologist

a) Professional code of conduct – social, cultural and other ethical issues
b) Scope of practice –different set ups and prerequisites
c) Documentation of diagnostic, therapeutic and referral reports
d) Counseling, guidance, facilitation of parent participation and transfer of skills
e) Evaluation of therapy outcome and follow up
f) Evidence based practice
g) Community based rehabilitation
h) Role of itinerant speech therapist, Anganwadis, resource teachers etc.
i) PWD act, National Trust, Consumer Protection Act, Noise Pollution Act and other public laws, RCI, ISHA and other organizations controlling the field
j) Facilities and concessions available for speech and hearing disabled

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

Recommended reading

- Owens. Jr, Kimberly, A. Metz, F.E. (2014). 5th Ed. Introduction to Communication Disorders: A life span based Perspective. Pearson Communication Science and Disorders Series.
- Hegde, M. N., & Davis, D. (2005). Clinical methods and practicum in speech-language pathology (4th ed.). Australia; Clifton Park, NY: Thomson Delmar Learning.
- Shipley, K. G., & Roseberry-McKibbin, C. (2006). Interviewing and counselling in communicative disorders : Principles and procedures (3rd ed.). Austin, Tex: Pro-Ed.
- Brookshire, R. H. (2003). Introduction to neurogenic communication disorders (6th ed.). St. Louis, Mo: Mosby.
- Hulit, L.M., Marle. R., Kathleen, R. H., & Fowey (2010). Born to Talk. Pearson Communication Science and Disorders Series 5th Ed.
- Roth, F. P., & Worthington, C. K. (2005). Treatment resource manual for speech language pathology (3rd ed.). Australia; Clifton Park, NY: Thomson Delmar Learning.
- Shipley, K. G., & McAfee, J. G. (2004). Assessment in speech-language pathology: A resource manual (3rd ed.). Australia; Clifton Park, NY: Delmar Learning.
- Ysseldyke, J. E., & Algozzine, R. (2006). Teaching students with communication disorders : A practical guide for every teacher. Thousand Oaks, Calif.: Corwin Press.

B 2.4 Audiology

Hours 60 Marks 100: Credits 4

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

a) describe the characteristics and causes of different types of hearing loss
b) take case history, administer the tuning fork tests and interpret the results
c) administer pure tone audiometry and understand its theoretical background
d) carryout different tests of speech audiometry and interpret the results
e) carryout subjective calibration and daily listening checks of the audiometer, and
f) do objective calibration

Unit 1: Hearing loss

a) Hearing loss and related terminologies
b) Various ways in which hearing loss can be classified
   - Degree of hearing loss
   - Types of hearing loss
   - Configuration of hearing loss
c) Characteristics of different types of hearing loss
d) Classification of causes for hearing loss:
   - Conductive, sensori-neural, mixed and central
   - Adult Vs child
   - Congenital Vs acquired
   - Pre-natal, natal and post-natal causes
   - Genetic Vs environmental causes

Unit 2: Case history and tuning fork tests

a) Need for case history
b) Basics of history taking
c) Essential factors to be included in case history for adults and children
d) Interpretation of case history
e) Audiological evaluation – rationale and purpose
f) Principles, procedure, interpretation, advantages and disadvantages of tuning fork tests
g) Audiometric version of Weber and Bing test

Unit 3: Pure tone audiometry

a) Classification of audiometers, parts of an audiometer, characteristics and specifications of transducers used (earphones, bone vibrators, loud speakers)
b) Audiogram- concept and symbols used
c) Clinical method of threshold estimation
d) Factors affecting air conduction threshold
e) Bone conduction thresholds- measurements, factors effecting

f) Permissible noise levels in the audiometric room

Unit 4: Speech audiometry

a) Importance and purpose
b) Different types of stimuli used in speech audiometry
c) Concept of phonetically and phonemically balanced
d) Speech detection thresholds – procedure and application
e) Speech reception thresholds – procedures and application
f) Word recognition scores –procedure and applications
g) PIPB function – procedure and applications
h) Factors affecting speech audiometry
i) BC speech audiometry – procedure and its application
j) Test materials available in various languages

Unit 5: Clinical masking and instrumental calibration

a) Definition and different terminologies
b) Purpose and rationale of clinical masking
c) Different types of stimulus employed in clinical masking
d) Interaural attenuation and factors affecting interaural attenuation
e) When to mask and how much to mask – importance of adequate noise levels
f) Different procedures for masking
g) Masking for speech audiometry
h) Calibration definition and purpose
i) Daily listening checks and subjective calibration
j) Objective calibration of air conduction transducers
k) Objective calibration of bone conduction transducers
l) Frequency calibration

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

Recommended reading

- 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.
- Kaplan, H., Gladstone, V. S., & Lloyd, L. L. (1993). Audiometric Interpretation: A Manual of Basic Audiometry (2 edition.). Boston: Pearson.
- 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.
- Silman, S., & Silverman, C. A. (1997). Auditory Diagnosis: Principles and Applications (Reissue edition.). San Diego: Singular Publishing Group

B 2.5 Electronics and Acoustics

Hours 45 Marks 100 : Credits 3

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

a) concept and types of power supply for biomedical instruments
b) basic aspects of digital signal processing
c) theoretical basis of acoustics required for audiologists, and
d) functioning of computers and computing systems

Unit 1: Electronic components and power supply

a) Resistors, capacitors, inductors
b) Transformers and potentiometers,
c) Semiconductor diodes and transistors
d) Light emitting devices, seven segment displays, liquid crystal displays
e) Principles of operations and working of field effect transistors, unijunction transistors and thyristors
f) Introduction to linear and digital integrated circuits
g) Block diagram of a DC power supply
h) Linear regulated power supplies, line regulation and load regulation, specifications of a DC power supply unit, switched mode power supply
i) AC power supply, stabilizers, uninterrupted power supply, and inverters
j) Basic electronic concepts such as polarity, grounding

Unit 2: Introduction to acoustics

a) Vibrations and their characteristics
b) Sound - generation and propagation
c) Characteristics of sound
d) Amplitude, frequency and phase of pure tones
e) Amplitude, frequency and phase of complex tones (FFT and spectrum, relationship between time waveform, FFT and impulse response)
f) Reflection and absorption, acoustic impedance, reverberation
g) Impedance and admittance
h) Electro-mechano-acoustic transformers

Unit 3: Acoustical treatment, transducers and basics of computers

a) Introduction to audiometric rooms
b) Absorption coefficient, Sabine’s formula
c) Materials for construction of audiometric rooms
d) Lighting, grounding and other miscellaneous issues related to audiometric rooms
e) Evaluation of efficiency of sound proofing in the audiometric rooms
f) Amplifiers

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

Unit 4: Digital signal processing

a) Digital signal processing –introduction and need
b) Analog to digital converters, sampling and quantization
c) Fundamentals of digital filtering
d) Infinite impulse response and finite impulse response filters
e) Time domain methods of speech processing
f) Frequency domain methods of speech processing
g) Linear predictive analysis of speech signals
h) Digital coding of speech signals
i) Automatic speech recognition
j) Speech synthesis

Unit 5: Instrumentation in speech and hearing

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

Recommended reading

- Haughton, P., & Haughton, P. M. (2002). Acoustics for Audiologists (1st edition.). San Diego, California: 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, California: Delmar Cengage Learning.

B 2.6 Indian Music

Hours 30 No exam : No credits

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

a) have knowledge on the basics of Indian music systems,
b) understand the similarities/differences between singing and speaking,
c) apply the dynamics of voice production and change in singing to speech therapy,
d) design vocal hygiene programs for professional voice users, and
e) understand the importance of hearing and perception to singing.

Unit 1: Introduction

a) Fine arts in general, music in particular. place of music in life
b) Indian systems of music - Carnatic, Hindustani and others
c) History of Carnatic and other systems of Indian music
d) Comparative study of Carnatic and Hindustani styles of music
e) Basic tones of Indian music
f) Evolution of musical Scales and raagas
g) Definition and detailed explanation of some technical terms relating to music - sangeetha, adhara shruthi, nada, swaras, raga etc

Unit 2: Voice and related systems in music

a) Requirement of voice in singers
b) Puberty and voice - implications for singers
c) Characteristics of musical sounds - pitch, loudness and quality of voice in singing
d) Phonation for speech and voice - differences between the act of speaking and singing. Coordination of respiratory, phonatory, resonatory and articulatory systems in speaking and singing.

Unit 3: Factors influencing voice and singing

a) Posture, respiration and music
b) Singing - differences between men and women
c) Suprasegmental features of speech and singing
d) Factors relating to music that affect voice

Unit 4: Professional voice care

a) Usage of voice for speaking and singing – effective use of voice, voice abuse/misuse
b) Professional voice users – Singers
c) Problems faced by singers – short and long term
d) Vocal hygiene tips: Do’s and Don’ts for professional singers

Unit 5: Music and Hearing

a) Role of hearing for musicians
b) Enhanced auditory perception in trained musicians
c) Adverse effect of music on hearing – music induced hearing loss
d) Prevention of music induced hearing loss

Recommended reading

- Banerjie, M. (2013). New Approach and Possibilities of Voice Culture in Hindustani Classical Music. Retrieved
- Bunch, M (1982). The dynamics of the singing voice. NY: Springer Verlag
- Donna Frazier and Roger Love (1999). Set Your Voice Free: How to Get the Singing Or Speaking Voice You Want. Self-help book https://doi.org/10.1371/journal.pone.0155084
- Johan Sundberg (1990). What's so special about singers? Journal of Voice 4(2), 107-119
- Johan Sundberg (1993). Breathing behavior during singing. The NATS Journal. https://www.nats.org/_Library/Kennedy_JOS_Files.../JOS-049-3-1993-004.pdf
- Kate DeVore and Starr Cookman (2009). The Voice Book: Caring For, Protecting, and Improving Your Voice. Chicago Review Press
- Morgan A. Selleck, Robert T. Sataloff (2014). The Impact of the Auditory System on Phonation: A Review. Journal of Voice, 28 (6), 688–693 DOI: https://doi.org/10.1016/j.jvoice.2014.03.018
- R.Leanderson J.Sundberg (1988). Breathing for singing. Journal of Voice,2 (1),2-12. https://doi.org/10.1016/S0892-1997(88)80051-1
- Robert Caldwell and Joan Wall (2016). Mastering the Fundamentals: Body, breath, phonation, and resonance. https://www.dictionforsingers.com/mastering-the-fundamentals-body-breath-phonation-and-resonance.html
- Sambamurthy, P (1982). History of Indian Music. Madras: Indian Music publisher
- Sataloff R.T. (1991). Professional voice: The science and art of clinical care. NY: Ravens Press Ltd.
- Sauro Salomoni, Wolbert van den Hoorn, Paul Hodges (2016). Breathing and Singing: Objective Characterization of Breathing Patterns in Classical Singers http://shodhganga.inflibnet.ac.in/bitstream/10603/7570/11/11_chapter%207.pdf

B 2.6 Yoga

Hours 30 No exam : No credits

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

a) explain the fundamentals of yoga,
b) explain the relevance of yoga to speech-language therapy,
c) implement yoga as part of speech-language and hearing therapy, and
d) demonstrate basic yoga practices, and
e) explain the relationship between yoga concepts (respiration, posture, meditation) and speech-voice production.

Unit 1: Basis of yoga

a) History, development and practice
b) Basic principles and systems of yoga
c) Yoga and the body metabolism
d) Yoga and psychosocial behavior
e) Yoga, attention and cognition
f) The concept of yoga and health

Unit 2: Techniques and practice of yoga: breathing and body balance

a) Methods of Yoga, their basis and practice:
   - posture,
   - breathing
   - meditation (concentration technique),
   - relaxation
b) Indications for Yoga: Client characteristics
c) Therapeutic Application of Yoga
d) Effectiveness of Yoga as a therapy technique
e) Yoga and development of the persona – physical, mental, emotional, intellectual, and spiritual

Unit 3: Yoga for speech disorders

a) Coordination of respiration, phonation, and articulation
b) Yoga for fluency disorders – Stuttering and cluttering
c) Yoga for voice disorders – Vocal strengthening, increasing respiratory support
d) Yoga for motor speech disorders in children (cerebral palsy, apraxia) and adults (dysarthria)
e) Research findings

Unit 4: Yoga and language disorders

a) Yoga for child language disorders:
   - Autism Spectrum Disorders (ASD)
   - Attention Deficit Hyperactivity Disorder (ADHD)
   - Specific Language Impairment (SLI)
   - Intellectual Disability (ID)
   - Learning Disability (LD)

b) Yoga for adult language disorders - Aphasia
c) Other neurological disorders
d) Research findings

Unit 5: Yoga and auditory-vestibular disorders

a) Yoga for tinnitus and hyperacusis
b) Yoga for Central Auditory Processing Disorders (CAPD)
c) Yoga for vestibular disorders
d) Yoga and family stress associated with children with deafness
e) Research findings

Recommended reading

- Balakrishnan, J.M. (2009). Yoga for stuttering: Unifying the voice, breath, mind and body to achieve fluent speech. Berkeley, CA: North Atlantic Books.
- Louise Goldberg (2013). Yoga therapy for children with autism and special needs. Published by W.W. Norton & Company, NY, USA.
- McCall T. Yoga as medicine: the yogic prescription for health and healing. New York: Bantam Books; 2007
- Nagaratna, R., & Nagendra H. R. (2008). Yoga for positive health. Bangalore: Swami VivekanadaYoga Prakashana.
- Riley, D. (2004). Hatha yoga and the treatment of illness. Alternative Therapies in Health and Medicine, 10(2), 20–21.
- Sivananda SRIS, The Science of Pranayama, ed 16 A devine life society, 1997.
- William Damon, Richard M. Lerner, Deanna Kuhn (2006). Handbook of Child Psychology. 6th Edition, Vol. 2: Cognition, Perception, and Language. John Wiley &Sons, Inc., NJ
- Yoga for Voice Culture. (n.d.) Retrieved from http://indianmedicine.nic.in/writereaddata/linkimages/7196039746yoga%20for%20voice%20culture4.pdf
- Yoga for Voice Improvement. (n.d.) In Natural Therapy Pages. Retrieved from http://www.naturaltherapypages.co.nz/article/Yoga_for_Voice_Improvement.

B 2.7 Environmental Studies

Hours 15 No exam : No credits

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

a) the different systems of our environment (natural resources, biodiversity and eco systems),
b) the role of different components of our environment to maintain equilibrium of our planet,
c) the role of living and nonliving things in the maintenance of our environment,
d) our role in causing environmental pollution and its hazards, and
e) understand the efforts one has to put to maintain the equilibrium of our planet.

Unit 1: Introduction to environmental studies and ecosystems

a) Multidisciplinary nature of environmental studies; components of environment-atmosphere, hydrosphere, lithosphere and biosphere
b) Scope and importance; concept of sustainability and sustainable development.
c) 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:

- Forest ecosystem
- Grassland ecosystem
- Desert ecosystem
- Aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 2: Natural resources: renewable & non-renewable

a) Land resources and land use change; land degradation, soil erosion and desertification.
b) Deforestation: causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations.
c) Water: use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state)
d) Heating of earth and circulation of air; air mass formation and precipitation
e) Energy resources: Renewable & non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies.

Unit 3: Biodiversity

a) Levels of biological diversity: genetic species and ecosystem diversity; biogeography zones of India; biodiversity patterns and global biodiversity hot spots.
b) India as a mega-biodiversity nation; endangered and endemic species of India

c) Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; conservation of biodiversity: in-situ and ex-suit conservation of biodiversity
d) Ecosystem and biodiversity services: ecological, economic, social, ethical, aesthetic and informational value.

Unit 4: Environmental pollution and environmental policies and practices

a) Environmental pollution: types, causes, effects and control; air, water, soil, chemical and noise pollution
b) Nuclear hazards and human health risks
c) Solid waste management: control measures of urban and industrial waste
d) Pollution case studies
e) Climate change, global warming, ozone layer depletion, acid rain and impacts on human communities and agriculture.
f) 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)
g) Nature reserves, tribal population and rights, and human, wildlife conflicts in Indian context.

Unit 5: Human communities and the environment and field work

a) Human population and growth: impacts on environment, human health and welfares.
b) Carbon foot-print
c) Resettlement and rehabilitation of project affected persons; case studies
d) Disaster management: floods, earthquakes, cyclones and landslides
e) Environmental movements: Chipko, silent valley, Bishnios of Rajasthan
f) Environmental ethics: role of religions and cultures in environmental conservation
g) Environmental communication and public awareness, case studies (e.g., CNG vehicles in Delhi)

Practicum

- 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.

Recommended reading

- Loreau, M. & Inchausti, P. 2002. Biodiversity and Ecosystem functioning: Synthesis and Perspectives. Oxford University Press, Oxford, UK.
- Bansil, P.C. 2004. Water Management in India. Concept Publishing Company, India.

- Gillespie, A. 2006. Climate Change, Ozone Depletion and Air Pollution: Legal Commentaries with Policy and Science Considerations. Martinus Nijhoff Publishers.
- Leopold, A. 1949. The Land Ethic. pp. 201-214. Chicago, USA.
- Leelakrishnan, P. 2008. Environmental Law in India (3rd edition). LexisNexis India.
- Naseem, M. 2011. Environmental Law in India Mohammad. Kluwer Law International.

B 2.8 Clinicals (Speech-language Pathology)

Hours 120 Marks 100: Credits 4

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

B 2.9 Clinicals (Audiology)

Hours 120 Marks 100: Credits 4

1) Measure difference limen of intensity, frequency and duration on 10 normal hearing adults and plot it in graphical form and interpret the results

2) Carryout daily listening checks and subjective calibrations 20 times and observe objective calibration once

3) Perform otoscopy and draw the tympanic membrane of 10 healthy normal individuals

4) Administer different tuning fork tests on 5 conductive and 5 sensorineural hearing loss individuals

5) Observe case history being taken on 5 adults and 5 children with hearing problem and correlate the information from case history to results of pure tone audiometry

6) Take case history on 5 adults and 5 children with hearing problem and correlate the information from case history to results of pure tone audiometry

7) Administer different tuning fork tests on 5 simulated conductive and 5 sensorineural hearing loss individuals

8) Carry out pure tone and speech audiometry on 10 normal hearing individuals

9) Carry out clinical masking on 10 normal hearing individuals with simulated conductive hearing loss and carry out clinical masking on 5 individuals with conductive hearing loss and 5 individuals with sensorineural hearing loss

10) Plot the audiogram, calculate the pure tone average and write the provisional diagnosis of observed clients

11) Perform otoscopy (under supervision) on at least 1 client with following conditions: Tympanic membrane perforation, SOM, CSOM

12) Carryout daily listening checks and subjective calibrations 20 times and observe objective calibration once

Semester 3

B 3.1 Voice and its Disorders

Hours 60 Marks 100 : Credits 4

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

a) describe characteristics of normal voice and identify voice disorders
b) explain etiology related to voice problems, and its pathophysiology
c) assess voice disorders, and
d) provide counselling and therapy to individuals with voice disorders

Unit 1: Basic concepts in voice and its production

a) Definition and functions of voice – biological and non-biological
b) Parameters of voice
c) Structures and function of respiratory system relating to phonation
d) Laryngeal anatomy including blood supply and innervations
e) Vocal tract resonance and voice quality
f) Development of voice: birth to senescence; structural and voice related changes
g) Aerodynamic myo-elastic theory of voice production
h) Voice mechanics – physiologic, acoustic and aerodynamic correlates of voice
i) Pitch and loudness changing mechanism, voice registers and voice quality
j) Description of normal and abnormal voice: parametric, pathologic/perceptual, social

Unit 2: Characteristics and pathophysiology of voice disorders

a) Pathologies of the laryngeal mechanism: classification of voice disorders, incidence, and prevalence
b) Etiology of voice disorders: voice misuse and abuse, medical related etiologies, primary disorder etiologies and personality related etiologies
c) Pathologies of vocal fold cover and muscular dysfunction
d) Non-organic voice disorders: functional disorders, psychosomatic- functional aphonia and physiological- voice abuse, puberphonia)
e) Congenital voice disorders
f) Neurological voice disorders
g) Voice problems in systemic illnesses and endocrine disorders
h) Voice problems in the elderly, transgenders
i) Voice problems in professional voice users: teachers and singers

Unit 3: Assessment of voice

a) Referral sources, medical examination and team approach
b) Protocol for voice assessment: components and philosophies (ICF, ICD)

c) Clinical voice laboratory: principles of instrumental measurements – electrical error, electrical safety, hygiene safety; recording of data; storage; patented soft wares, free wares
d) Perceptual evaluation of voice: GRBAS, CAPE -V
e) Visualization procedures- indirect laryngoscopy, video laryngoscopy & stroboscopy
f) Acoustic analysis of voice: F0 related measures, intensity related measures, quality related measures, phonetogram, DSI
g) Electroglottography and inverse filtering procedures
h) Aerodynamic analysis of voice: static & dynamic measures
i) Self-evaluation of voice : PROM, VHI, V-DOP
j) Reporting of voice findings, normative comparisons, differential diagnosis

Unit 4: Management of voice

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

Unit 5: Intervention strategies for voice disorders

a) Vocal trauma related disorders
b) Functional voice disorders – inappropriate vocal components, puberphonia/mutational falsetto
c) Functional aphonia
d) Muscle tension dysphonia, sulcus vocalis, vocal fold palsy, spasmodic dysphonia
e) GERD/LPR
f) Benign vocal fold lesions requiring surgical intervention
g) Post-operative care for benign vocal fold lesions disorders
h) Documenting voice therapy outcomes

Practicals

a) 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

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

Recommended reading

- 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.
- Professional Voice: Assessment and Management. Proceedings of the national workshop on "Professional Voice: Assessment and management", 9-10 Dec 2010. All India Institute of Speech & Hearing, Mysore. 2010.
- 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.
- Voice: Assessment and Management. Proceedings of the national workshop on "Voice: Assessment and management", 14-15 Feb 2008. All India Institute of Speech & Hearing, Mysore. 2008.

B 3.2 Speech Sound Disorders

Hours 60 Marks 100 : Credits 4

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

a) describe normal speech sound development and characterization of individuals with speech sound disorders.
b) perform phonological analysis and assessment of speech sound disorders, and
c) plan intervention for individuals with speech sound disorders.

Unit 1: Speech sound acquisition and development

a) Articulatory phonetics - phonetic description of vowels & consonants.
b) Phonology & phonological theories – generative phonology, natural phonology.
c) Phonology & phonological theories – non-linear phonology, optimality theory.
d) Methods to study speech sound acquisition – diary studies, cross sectional studies and longitudinal studies.
e) Speech sound acquisition and factors influencing it

   i) birth to one year (development of infant speech perception, early speech production).
   ii) one to two years (consonant inventories, influence of phonological knowledge on vocabulary acquisition).
   iii) two to five years (growth of phonetic, phonemic, phonotactic inventory – consonants, clusters, phonological patterns).
   iv) above five years (speech sound mastery and development of literacy – phonological awareness).

f) Acoustics of speech sounds
g) Speech intelligibility, factors affecting speech intelligibility, assessment
h) Co articulation: types and effects
i) Phonological development in bilingual children.
j) Phonological development in Indian languages.

Unit 2: Assessment of speech sound disorders - I

a) Current concepts in terminology and classification of speech sound disorders
   i) Organically-based speech sound disorders, childhood apraxia of speech.
   ii) Speech sound disorders of unknown origin, classification by symptomatology.
b) Factors related to speech sound disorders
   i) structure and function of speech & hearing and oro-sensory mechanisms.
   ii) cognitive – linguistic, psychosocial and social factors.
   iii) metalinguistic factors related to speech sound disorders.
c) Introduction to assessment procedures: aims of assessment, screening and comprehensive assessment.

d) Speech sound sampling procedures - issues related to single word and connected speech samples; imitation and spontaneous speech samples, contextual testing, recording of speech samples.
e) Review of tests in English and other Indian languages - single word articulation tests, deep articulation of articulation, and computerized tests of phonology.
f) Influence of language and dialectal variations in assessment.
g) Transcription of speech sample - transcription methods –IPA and extension of IPA; broad and narrow transcription.

Unit 3: Assessment of speech sound disorders - II

a) Introduction to independent and relational analysis.
b) 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).
c) Relational analyses – SODA, pattern analysis, (distinctive features, phonological process analysis).
d) Phonological processes analyses – language specific issues, identification and classification of errors.
e) Assessment of oral peripheral mechanism.
f) Speech sound discrimination assessment, phonological contrast testing.
g) Stimulability testing.
h) Determining the need for intervention – speech intelligibility and speech severity assessment.
i) Factors influencing target selection – stimulability, frequency of occurrence, developmental appropriateness, contextual testing, and phonological process analysis.
j) Case study – Documenting the assessment findings and determining the need for intervention.

Unit 4: Management – I

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

Unit 5: Management – II

a) Core vocabulary approach.
b) Introduction to linguistically-based treatment approaches- distinctive feature therapy.
c) Minimal pair contrasts therapy.
d) Metaphon therapy, cycles approach.
e) Broad-based language approaches.
f) General guidelines for linguistically-based approaches.
g) Phonological awareness and phonological disorders.
h) Phonological awareness intervention for preschool children.
i) Adapting intervention approaches to individuals from culturally and linguistically diverse backgrounds.
j) Role of family in intervention for speech sound disorders.

Practicals

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

Recommended reading

- 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.

B 3.3 Diagnostic Audiology: Behavioral Tests

Hours 60 Marks 100 : Credits 4

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

a) choose ideal test battery for assessing different kinds of auditory disorders
b) independently run the tests and interpret the results to identify the above conditions and also use the information for differential diagnosis
c) modify test parameters to improve sensitivity and specificity of tests.
d) make appropriate diagnosis based on the test results and suggest referrals.

Unit 1: Introduction to diagnostic audiology

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

Unit 2: Tests to identify cochlear and retro cochlear pathology

a) ABLB, MLB and SISI tests
b) Behavioral tests of adaptation
c) Bekesy audiometry
d) Brief tone audiometry
e) PIPB function
f) Glycerol test
g) Test to identify dead regions of cochlea

Unit 3: Tests to diagnose functional hearing loss

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

Unit 4: Assessment of central auditory processing

a) Definition, different behavioral processes
b) Behavioral and clinical indicators of central auditory processing disorders
c) Bottle neck and subtlety principles and their implications in
d) Tests to detect central auditory processing disorders
e) Monaural low redundancy tests - filtered speech tests, time compressed speech test, speech-in-noise test, SSI with ICM, other monaural low redundancy tests.
f) Dichotic speech tests – dichotic digit test, Staggered spondaic word test, dichotic CV test, SSI with CCM, competing sentence test, other dichotic speech tests.
g) Binaural interaction tests – RASP, BFT, MLD, other binaural interaction tests
h) Tests of Temporal processing – pitch pattern test, duration pattern tests, other temporal ordering tests, gap detection test, TMTF
i) Variables influencing the assessment of central auditory processing: Procedural and subject variables
j) Test findings of important tests in subjects with central auditory disorders: brainstem lesion, cortical, CAPD in children.

Unit 5: Assessment of persons with vestibular disorder, tinnitus, hyperacusis

a) Introduction to structure and function of vestibular system
b) Vestibular ocular reflex and vestibulospinal reflex
c) Overview on other systems involved in balance
d) Signs and Symptoms of vestibular disorders
e) Team in the assessment and management of vestibular disorders
f) Behavioral tests to assess vestibular functioning: Fukuda stepping test, tandem gait test, finger nose pointing, Romberg test, Sharpened Romberg test, Dix-Hallpike test, Log-roll test
g) Overview of tinnitus and hyperacusis and tests for assessment
h) Pitch matching, loudness matching, residual inhibition, Feldman masking curves
i) Johnson Hyperacusis Dynamic Range Quotient

Practicals

a) Administer ABLB, MLB and prepare ladder gram (ABLB to be administered by blocking one ear with impression material)
b) Administer classical SISI on 3 individuals and note down the scores
c) Administer tone decay tests (classical and its modifications) and note down the results (at least 3 individuals)
d) Administer Bekesy audiometry
e) Administer Brief tone audiometry
f) Plot PIPB function using standardized lists in any 5 individuals
g) Administer the tests of functional hearing loss (both tone based and speech based) by asking subject to malinger and having a yardstick of loudness.
h) Administer CAPD test battery to assess different processes on 3 individuals and note down the scores

i) 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.
j) Estimate the pitch and loudness of tinnitus in 2 persons with tinnitus (under supervision). Assess the residual inhibition in them.
k) Plot Feldman masking curves for a hypothetical case
l) Administer Johnson Hyperacusis Dynamic Range Quotient on any 2 of the individuals and note down the scores.

Recommended reading

- 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.
- Jerger, J. (1993). Clinical Audiology: The Jerger Perspective. Singular Publishing Group.
- 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.

B 3.4 Amplification Devices

Hours 60 Marks 100 : Credits 4

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

a) assess the candidacy for hearing aids and counsel accordingly
b) evaluate the listening needs and select the appropriate hearing aid
c) independently program digital hearing aids as per the listening needs of the client
d) independently assess the benefit from the hearing aid using subjective and objective methods
e) make all types of ear molds
f) counsel the parents/care givers at all stages

Unit 1: Types of hearing aids

a) Historical development of hearing aids: development of concept of amplification, development of different types of amplification devices
b) Review of basic elements of hearing aids: microphone, amplifier, receiver/vibrator, cords, batteries.
c) Classification and Types of hearing aids
   - Body level, ear level, in the ear, ITC, invisible in the canal, CIC
   - Binaural, pseudo binaural, monaural
   - Programmable, trimmer digital and digital hearing aids
   - Directional hearing aids, modular hearing aids
   - RIC hearing aids
   - Implantable hearing aids
   - Master hearing aids
   - CROS hearing aids
d) Group amplification – hard wired, induction loop, FM, infrared
e) Assistive listening devices – types and selection (telephones, television, typing technology)

Unit 2: Technological aspects in hearing aids

a) Routing of signals, head shadow/baffle/diffraction effects
b) Output limiting and issues related to them: peak clipping, compression
c) Concept and use of compression in hearing aids: BILL, TILL, PILL, wide dynamic range compression, syllabic compression, dual compression
d) Signal processing in hearing aids – BILL, TILL, PILL
e) Signal enhancing technology
f) Noise reduction algorithms
g) Extended low frequency amplification, frequency lowering technology (transposition, compression)
h) Recent advances in hearing aids

Unit 3: Electro-acoustic measurements for hearing aids

a) Purpose and parameters to be considered: OSPL90, SSPL90, HFA SSPL90, gain, full on gain, HFA full on gain, reference test gain, basic frequency response, total harmonic distortion, intermodulation distortion, input output functions, instrumentation, procedure, variables affecting EAM
b) Electro-acoustic measurements, BIS, IEC and ANSI standards
c) Environmental tests.
d) Care, maintenance and troubleshooting of hearing aids
e) Counselling and orienting the hearing aid user (client and significant others)

Unit 4: Selection of hearing aids

a) Pre-selection factors; prescriptive and comparative procedures; functional gain and insertion gain methods; use of impedance, OAEs and AEPs audiometry; Hearing aids for conductive hearing loss; hearing aids for children; hearing aids for elderly; selection of non-linear programmable and digital hearing aids
b) Hearing aid programming
c) Methods for assessing hearing aid benefit
d) Real ear insertion measurements for verification of hearing aid benefit: REIG, REUR, REAR, REOR, RESR, REIG, REAG, RECD
e) Acoustic feedback in hearing aids

Unit 5: Mechano-acoustic couplers (Ear molds)

a) Different types of molds
b) Procedure for hard molds and soft mold
c) UV curing methods
d) Special modifications in the ear molds: vents (diagonal and parallel), deep canal molds, short canal, horns, Libby horn, reverse horn, acoustic modifier
e) Effects of mechano-acoustic couplers on the hearing aid output

Practicals

a) Listen to the output of different types and classes of hearing aids (monaural, binaural, analog, digital hearing aids), in different settings
b) Troubleshoot hearing aids: Check the continuity of the receiver cord using multi meter, measure the voltage of different sized batteries using multi meter, Check voltage of batteries different types and sizes
c) Carry out electroacoustic measurements for the body level and ear level hearing aids
d) Program the hearing aid for different configuration and degrees of hearing loss (at least 5 different audiograms) using different prescriptive formulae
e) Program hearing aids for different listening situations (at least 3 different situations)
f) Vary the compression settings in a digital hearing aid and note down the differences in the output

g) Perform real ear insertion measurements using different hearing aids (body level and ear level, hearing aids of different gains)
h) Compare speech perception through conventional BTE and RIC hearing aids using a rating scale
i) Observe assistive listening devices such as telephone amplifier, vibro-tactile alarms, note down the candidacy and their utility.
j) Administer a questionnaire to assess hearing aid benefit on 2 persons using hearing aids.
k) Carry out a role play activity of counselling a hearing aid user
l) 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

Recommended reading

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

B 3.5 Pediatrics and Genetics

Objectives: After studying the course, the students will have

a) a basic idea of the relationship between genetics and speech-language and hearing disorders,
b) knowledge of the dynamics of growth and development,
c) an understanding of the factors in child development that influences growth and development of speech, language and hearing.

Part A: Pediatrics

Hours 15 Marks 25: Credits 1

Unit 1: Basics concepts in pediatrics

a) Growth and development – basic concepts, growth from birth to puberty, growth during adolescent period
b) Early identification of perinatal pediatric disorders leading to speech and hearing impairment
c) Nutritional disorders in children – protein energy malnutrition, water soluble vitamins, fat soluble vitamins, trace elements
d) Primitive reflexes and development

Unit 2: Communication disorders and syndromes in pediatric population

a) Speech-language & hearing disorders in children
b) Risk factors and their effect on speech-language and hearing development
c) Evaluation of high risk babies
d) Feeding difficulties in children
e) Genetic syndromes and speech and hearing disorders in children
f) Family counselling of parents of high risk babies

Recommended reading

- A Parthasarathy, PSN Menon, Piyush Gupta and Rohith Agarwal (2016). IAP textbook of Paediatrics (6th edition). Jaypee Publishers
- Kliegman, St Geme Blum, Shah, Tasker and Wilson (2020). Nelson textbook of Pediatrics Volume 2 (Edition 21). Elsevier.
- Rosetti, L.M. (1996). Communication intervention: Birth to three. Chapter I. San Diego: Singular Group Inc.

Part B Genetics

Hours 15 Marks 25: Credits 1

Unit 1: Basic concepts and terminologies in genetics

a) Principles of genetics – genes, human chromosome, cytogenetics, mitosis and meiosis, numerical aberrations, structural aberrations, the sex chromosome anomalies.
b) Introduction to pedigree construction, traits, environment – genetic interactions influencing fetus.
c) Introduction to laboratory techniques
d) Basic and advanced methods in genetics: cloning, molecular genetics, epigenetics.
e) Study of DNA.

Unit 2: Genetic basis of communication disorders

a) Genetic basis of speech- language and hearing impairment
b) An overview of various genetic conditions leading to communication disorders
c) Genetic and Mendelian disorders, chromosomal disorders, non-Mendelian modes of inheritance
d) Management of genetic disorders - gene therapy
e) Human genome mapping project
f) Genetic counselling

Recommended reading

- Jung, J.H., Gagne, J.P., Godden, A.L., Leeper, H.A., Moon, J.B. & Seewald, R.C. (1989). Genetic syndromes in communication disorders. Chapter I, Texas: Proed. Inc.
- Ludlow, C.L. & Cooper, J.A. (1963). Genetic aspects of speech and language disorders. Chapter IV. New York: Academic Press.
- Martin, A., Reord, A. & Styhens, D. (Eds) (1996). Genetics and hearing impairment. London: Whnes Publishers
- Shprintzen, R.J. (1997). Genetics, syndromes and communication disorders. Chapter VII, London: Singular Publishing Group Inc.

B 3.6 Indian Constitution

Hours 15 No exam : No credits

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

a) the basic structure of our constitution,
b) the role of different constitutional and other functionaries,
c) the nature of the Republic of India.

Unit 1: Indian constitution and human rights

a) Meaning and importance of constitution
b) Making of Indian constitution
c) Salient features and the preamble

Unit 2: Fundamentals

a) Fundamental rights
b) Fundamental duties
c) Directive principles

Unit 3: Union government

a) Parliamentary affairs
b) Constitutional authorities
c) The Executive and the union ministry
d) The judiciary of the country

Unit 4: Major functionaries

a) Union Public Service Commission
b) Election Commission
c) NITI Aayog
d) Reserve Bank of India
e) Investigative bodies

Unit 5: The Republic

a) States and union territories
b) Governor
c) State legislative bodies
d) Law making powers of the state governments
e) Major functionaries of the states

Recommended reading

- The Indian constitution
- Relevant notifications of the central and state governments
- Gazette notifications of Indian government

B 3.6 Basics of Computer Applications

Hours 15 No exam : No credits

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

a) identify the basic systems in a computer,
b) use Windows 10 operating system
c) use computers for data storage, retrieval and analysis, and
d) to use internet for data transmission and reception.

Unit 1: Introduction to computers

a) Introduction, types of computer, components of computer, CPU, motherboard,
b) Primary storage devices: ROM, RAM, secondary storage: floppy, hard disk and their types, CDROM, pen drive,
c) Input & output devices: keyboard, mouse, scanner,
d) Display units, liquid crystal display projector,
e) Printers (dot matrix, inkjet & laser),
f) Multimedia components, modems and network interfacing card.

Unit 2: Windows operating system

a) Introduction, loading and starting windows,
b) Concept of plug and play, active desktop environment,
c) Control panel, adding new programs and hardware,
d) Menus, folders, shortcuts, display properties,
e) System tools, multimedia programs,
f) Editing pictures using paint

Unit 3: MS-Office, MS-Excel

a) MS-Word: Introduction to MS-office, installing and removing word, running programs and Managing files, opening, creating and saving documents,
b) Templates, navigating and selecting, editing and sorting, checking spelling and grammar, formatting,
c) Importing graphics and pictures, tables, long documents,
d) Sharing data with other users, security,
e) Creating and working with web pages, mail merge, editing equations, printing.
f) MS-Excel - working with workbooks and worksheets, spreadsheets, entering data and selecting cells, editing and formatting worksheets, mathematical functions, statistical functions, trigonometric functions, date and time functions, text functions, financial functions, lookup and reference functions, creation of charts and graphs, automated tasks, macros, switching from other applications, printing.

Unit 4: MS- Power point and MS-Access

a) MS-Power Point: Introduction, auto-content wizard, design templates, adding and formatting text, making notes and handouts, adding clip arts, drawings and other objects, equations, tables and charts, controlling the slide show, animations, printing presentations and slides.

b) MS-Access: Introduction, databases, data structures, creating tables, importing and linking tables, working with data, working with queries, creating forms and reports, writing expressions, working with macros, modules and events, replication, data access objects, data access methods and properties.

Unit 5: Internet

a) Introduction, LAN and WAN, dial-up and broadband networking,
b) Internet protocols, TCP/IP protocol,
c) Microsoft internet explorer, Netscape navigator, properties and customization,
d) World wide web, HTML,
e) Creation of web page using templates,
f) Search engines, chatting, e -mail.

Recommended reading

• Rajaraman, V. (1992). Fundamental of computers. New Delhi: Prentice Hall of India.

B 3.7 Clinicals in Speech-language Pathology

Hours 120 Marks 100 : Credits 4

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, preschoolers, kindergarten, primary school 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, specific language 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. Analyze 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.

Evaluation:

- Internal evaluation shall be based on attendance, clinical diary, log book and learning conference.
- External evaluation: Spot test, OSCE, record, viva-voce, case work

B 3.8 Clinicals in Audiology

Hours 120 Marks 100 : Credits 4

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. Methods to calibrate audiometer.
2. Materials commonly employed in speech audiometry.
3. Calculation pure tone average, percentage of hearing loss, minimum and maximum masking levels.
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 – 2 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 sensorineural hearing loss
3. Pure tone audiometry with appropriate masking on 5 individuals with conductive, 5 individuals SN hearing loss and 3 individuals with unilateral/asymmetric hearing loss

Evaluation:

- Internal evaluation shall be based on attendance, clinical diary, log book and learning conference.
- External evaluation: Spot test, OSCE, Record, viva-voce, case work

Semester 4

B 4.1 Fluency and its Disorders

Hours 60 Marks 100 : Credits 4

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

a) understand the characteristics of fluency and its disorders
b) evaluate and diagnose fluency disorders, and
c) manage fluency disorders in children and adults

Unit 1: Fluency

a) Scope and definition of fluency
b) Factors influencing fluency
c) Definition and characteristics of features of suprasegmentals in speech: rate of speech, intonation. rhythm, stress and pause
d) Suprasegmental features in typical speech
e) Suprasegmental features in the speech of persons with fluency disorders
f) Developmental aspects of suprasegmentals of speech

Unit 2: Stuttering and other fluency disorders

a) Stuttering: Definition and causes for stuttering
b) Characteristics of stuttering: core and peripheral characteristics, primary and secondary stuttering, effect of adaptation and situation
c) Development of stuttering
d) Normal non fluency: characteristics and differential diagnosis
e) Theories of stuttering: organic, functional, neurogenic, diagnosogenic and learning
f) Cluttering: Definition, causes and characteristics
g) Neurogenic stuttering: Definition, causes and characteristics

Unit 3: Assessment and differential diagnosis

a) Assessment of fluency disorders: stuttering, cluttering, neurogenic stuttering and normal non fluency:
b) Subjective methods: protocols and tests
c) Objective methods
d) Qualitative and quantitative assessment
e) Differential diagnosis of fluency disorders

Unit 4: Management of stuttering

a) Approaches to management
b) Changing scenario in management of stuttering

c) Different techniques and strategies used in management with their rationale
d) Relapse and recovery from stuttering
e) Issues of speech naturalness in stuttering

Unit 5: Management of fluency-related entities

a) Management of cluttering: rationale, techniques and strategies
b) Management of neurogenic stuttering: rationale, techniques and strategies
c) Management of normal non-fluency: rationale, techniques and strategies
d) Relapse and recovery in cluttering and neurogenic stuttering. Changes in normal non-fluency
e) Prevention and early identification of stuttering, and cluttering

Practicum

a) Assess the rate of speech in 5 normal adults.
b) Record and analyze the supra segmental features in typically developing children between 2 and 5 years.
c) Record audio visual sample of 5 typically developing children and 5 adults for fluency analysis.
d) Listen/see samples of normal non fluency and stuttering in children and document the differences.
e) Identify the types of disfluencies in the recorded samples of adults with stuttering.
f) Instruct and demonstrate the following techniques: airflow, prolongation, easy onset shadowing techniques.
g) Record 5 speech samples with various delays in auditory feedback and analyze the differences.
h) Administer SPI on 5 typically developing children.
i) Administer SSI on 5 adults with normal fluency.
j) Administer self-rating scale on 10 adults with normal fluency.

Recommended reading

- 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.
- Wall, M. J., & Myers F. L. (1995). Clinical Management of Childhood Stuttering. Texas, PRO-ED, Inc.

- 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.

B 4.2 Language Disorders in Children

Hours 60 Marks 100 : Credits 4

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

a) explain the process of acquisition of language and factors that influence its development in children.
b) identify and assess language delay and deviance in children.
c) select appropriate strategies for intervention.
d) counsel and provide guidance to parents/caregivers of children with language disorders.

Unit 1: Bases of language acquisition, development and disorders

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

Unit 2: Language disorders – definition, classification, causes, and characteristics

a) Intellectual disability: definition, classification, causes and characteristics
b) Autism spectrum disorders: definition, classification, causes and characteristics
c) Attention deficit hyperactive disorder: definition, classification, causes and characteristics
d) Language impairment - mixed receptive and expressive language disorder, specific language impairment: definition, classification, causes and characteristics
e) Learning disability: definition, classification, causes and characteristics
f) Acquired childhood aphasia: definition, classification, causes and characteristics
g) Sensory impairments and language disorders: types, causes and characteristics
h) Syndromic conditions leading to language difficulties: William syndrome, fragile x syndrome, Down syndrome
i) Other developmental disabilities: deaf-blind, cerebral palsy and multiple disabilities.

Unit 3: Assessment of language in children

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

Unit 4: Management of language disorders in children - I

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

Unit 5: Management of language disorders in children - II

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

Practicum

a) 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.
b) 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. Discuss the influence of bi- or multilingualism on vocabulary.
c) 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.
d) Administer 3D LAT, ALD, LPT, ComDEALL checklist on 2 typically developing children.
e) Draft a diagnostic report and referral letter for a child with language disorder.
f) Demonstrate general language stimulation techniques and discuss the clinical application.
g) Demonstrate specific language stimulation techniques with appropriate materials and discuss its clinical applications.
h) Draft Subjective Objective Assessment Plan (SOAP) for a pre-recorded sample of a 45 minute session of intervention for a child with language disorder.
i) Draft a lesson plan for a child with language disorder.
j) Draft a discharge summary report for a child with language disorder

Recommended reading

- Hegde, M. N. (2006). Treatment Protocols for Language Disorders in Children, Volume I: Essential Morphologic Skills (Vol. 1). Plural Publishing.
- Owens, R.E. (2008). Language development: An introduction (7th ed.). Boston: Pearsons

- 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
- Reed, V.A. (2004). An Introduction to children with language disorders (3rd Ed.) New York: Allyn & Bacon
- Roseberry-McKibbin, C. (2007). Language Disorders in Children: A multicultural and case perspective. Boston: Pearson Education, Inc.
- 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 978-81-928032-4-1.

B 4.3 Diagnostic Audiology: Physiological Tests

Hours 60 Marks 100 : Credits 4

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

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

Unit 1: Immittance evaluation

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

Unit 2: Auditory evoked potentials (AEPs): Auditory brainstem response (ABR)

a) Introduction and classification of AEPs
b) Instrumentation
c) Principles of AEP recording techniques:
d) Auditory brainstem response generators
e) Protocol and procedure of recording auditory brainstem response
f) Factors affecting auditory brainstem responses
g) Clinical applications of ABR
h) ABR in the pediatric population
i) Role of ABR in infant hearing screening

Unit 3: Overview of other AEPs

a) ECochG
b) Auditory Middle Latency Responses (AMLR) and their clinical applications
c) Auditory Long Latency Responses (obligatory responses) and their clinical applications

d) Other long latency potentials such as P300, MMN, P600, N400, T-complex, CNV) and their clinical applications
e) ASSR: Instrumentation, recording and clinical applications
f) Brainstem responses to speech and other complex signals

Unit 4: Otoacoustic emissions

a) Introduction to otoacoustic emissions
b) Origin and classification of OAEs
c) Instrumentation
d) Procedure of OAE measurement: SOAE, TEOAEs, and DPOAEs
e) Interpretation of results: SOAE, TEOAEs, and DPOAEs
f) Clinical applications of OAEs: SOAE, TEOAEs, and DPOAEs
g) Contralateral suppression of OAEs and its clinical implications

Unit 5: Physiological tests for assessment of vestibular system

a) Electronystagmography: procedure, interpretation, clinical applications
b) Videonystagmography, video oculography
c) Vestibular Evoked Myogenic Potentials
d) Overview of Rotatory chair test, video Head Impulse Test,
e) Overview of Dynamic Posturography

Practicum

a) Measure admittance in the calibration cavities of various volumes and note down the observations
b) Calculate Equivalent ear canal volume by measuring static admittance in an uncompensated tympanogram (10 ears)
c) Do tympanogram in the manual mode and measure peak pressure, peak admittance and ear canal volume manually using cursor (10 ears).
d) Measure gradient of the tympanogram (10 ears)
e) Administer Valsalva and Toynbee and William's pressure swallow test (5 ears)
f) Record acoustic reflex thresholds in the ipsi and contra modes, (10 ears)
g) Plot Jerger box pattern for various hypothetical conditions that affect acoustic reflexes and interpret the pattern and the corresponding condition.
h) Carry out Acoustic reflex decay test and quantify the decay manually using cursor (5 individuals).
i) 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.
j) Record ABR using single versus dual channels and, note down the differences
k) 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.
l) 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.

m) Record ASSR for stimuli of different frequencies and estimate the thresholds

n) 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).

o) Record DPOAEs and note down the amplitude, SNR, noise floor and reproducibility at octave and mid-octave frequencies (10 ears)

Recommended reading

- 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.
- 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.
- McCaslin, D. L. (2012). Electronystamography / Videonystagmography (1 edition). San Diego: Plural Publishing.
- Musiek, F. E., Baran, J. A., & Pinheiro, M. L. (1993). Neuroaudiology: Case Studies (1 edition). San Diego, Calif: Singular.
- Robinette, M. S., & Glattke, T. J. (Eds.). (2007). Otoacoustic Emissions: Clinical Applications (3rd edition). New York: Thieme.

B 4.4 Implantable Hearing Devices

Hours 60 Marks 100 : Credits 4

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

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

Unit 1: Implantable hearing devices

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

Unit 2: Bone anchored hearing devices and middle ear implants

a) Types, components
b) Surgical approaches, risks, complications
c) Audiological evaluations for candidacy, contraindications
d) Assessment of benefits

Unit 3: Cochlear implant and brain stem implants

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

Unit 4: Cochlear implants and brainstem implants

a) Signal coding strategies, classification, types
b) Intraoperative monitoring by audiologists
c) Objective measures: ESRT, ECAP, prom stim, EABR, aided cortical potentials
d) Post implant Mapping: schedule, pre-requisites, switch-on, mapping parameters, impedance, compliance, role of objective and subjective measures in mapping,
e) post mapping audiological evaluation

f) Assessment of benefits
g) Optimization of hearing aid on contralateral ear

Unit 5: Implantable hearing devices - counselling and troubleshooting

a) Post implant Counselling on care and maintenance and troubleshooting of the device
b) Overview of post implant rehabilitation including AVT
c) Factors affecting outcome of implantable devices in adults and children

Practicum

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

Recommended reading

- Clark, G., Cowan, R. S. C., & Dowell, R. C. (1997). Cochlear Implantation for Infants and Children: Advances. Singular Publishing Group.
- Cooper, H., & Craddock, L. (2006). Cochlear Implants: A Practical Guide. Wiley.
- Dutt, S. N. (2002). The Birmingham Bone Anchored Hearing Aid Program: Some Audiological and Quality of Life Outcomes. Den Haag: Print Partners Ipskamp.
- Eisenberg, L. S. (2009). Clinical Management of Children with Cochlear Implants.Plural Publishing.
- Gifford, R. H. (2013). Cochlear Implant Patient Assessment: Evaluation of Candidacy, Performance, and Outcomes. Plural Publishing.
- Kompis, M., & Caversaccio, M.-D. (2011). Implantable Bone Conduction Hearing Aids. Karger Medical and Scientific Publishers.
- Mankekar, G. (2014). Implantable Hearing Devices other than Cochlear Implants. Springer India.
- Møller A.R. (2006). Cochlear and Brainstem Implants (Vol. 64).
- Ruckenstein, M.J. (Ed.).(2012). Cochlear Implants and Other Implantable Hearing Devices. Plural.
- Suzuki J.L. (1988). Middle Ear Implant: Implantable Hearing Aids (Vol. 4). KARGER.
- Thoutenhoofd, E. (2005). Paediatric cochlear implantation: evaluating outcomes. Whurr.
- Valente, M. (2002). Strategies for selecting and verifying hearing aid fittings. 2nd Edn. Thieme.

B 4.5 Research Methods and Statistics

Hours 60 Marks 100 : Credits 4

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

a) basic concept of research in the field of audiology and speech-language pathology
b) design and execution of research, and
c) ethical guidelines for conducting research

Part A: Research Methods

Unit 1: Introduction to research methods

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

Unit 2: Research design in audiology and speech-language pathology

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

Part B: Statistics

Unit 3: Introduction to statistics and data collection

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

Unit 4: Statistics and research designs

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

Unit 5: Epidemiology

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

Recommended reading

- Dane F. C. (2011). Sampling and Measurement. In Evaluating research: Methodology for people who need to read research. New Delhi: SAGE publication.
- Field, A. (n.d.). Discovering Statistics Using IBM SPSS (4th ed.). SAGE Publications.
- Hegde M. N. (2010). A course book on Scientific and professional writing for speech language pathology (4thEdition), Singapore: Delmar 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.
- Jekel, F. J., Katz, L.D., & Elmore, G.J (2001). Basic Epidemiologic Concepts and Principles in epidemiology, Biostatistics, and Preventive Medicine (2nd Edition). Pennsylvania: Saunders
- Meline, T. (2010). A research primer for communication sciences and disorders. Singapore: Pearson publication.

B 4.6 Community Based Rehabilitation

Hours 15 Marks 50 : Credits 1

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

a) explain the concept, principles and scope of community-based rehabilitation
b) learn the strategies for promoting public participation in CBR
c) apply suitable methods for preparing persons with disability for rehabilitation within the community
d) provide need-based training to persons with disabilities
e) develop an understanding of the role of government and global agencies in CBR
f) learn about the role of media in enhancing community participation

Unit 1: Introduction to community based rehabilitation (CBR)

a) Concept and definition of CBR
b) Principles of CBR
c) Difference between CBR and institutional living
d) Socio-cultural and economic contexts of CBR
e) Scope and inclusion of CBR in government policies and programs

Unit 2: Preparing community and persons with disability for CBR

a) Awareness program: types and methods
b) Advocacy: citizen and self
c) Focus group discussion
d) Community based employment and higher education

Unit 3: Preparing persons with disability for CBR

a) Family counselling and family support groups
b) CBR and corporate social responsibility
c) School education: person centered planning, and peer group support
d) Transition: Individual transition plan, development of self-determination and self-management skills
e) Community related vocational training
f) Skill Training for living within community

Unit 4: Role of media in enhancing community participation

a) Mass media and its role in mobilization of community-based rehabilitation
b) Strategies for community awareness and participation
c) Different modes (print, electronic, audio-visuals, word-of-mouth)
d) Effectiveness of each media for different target groups
e) Educators' use of mass media for community-based rehabilitation and education

Unit 5: Models of CBR

a) Models of CBR
b) Disability issues and CBR
c) Concepts/programs in speech and hearing appropriate for CBR
d) Well known CBR programs in India

Recommended reading

- WHO publications on CBR
  - https://www.who.int/disabilities/cbr/en/
  - https://www.who.int/publications/i/item/community-based-rehabilitation-cbr-guidelines
  - https://www.who.int/disabilities/cbr/cbr_indicators_manual/en/
  - https://www.who.int/disabilities/cbr/matrix/en/
  - https://www.who.int/disabilities/include/en/
- S Goel (2006). An Introduction to Community Based Rehabilitation Continuing Medical Education. The Internet Journal of Health, 6 (2), 1-4
- http://cbrresources.org/

B 4.6 Indian Sign Language

Hours 15 Marks 100 : Credits 1

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

a) discuss the two manual options with reference to Indian special schools.
b) discuss the relevant issues like literacy, training with reference to manual options.
c) describe manual options in the light of issues like language, culture and identity.

Unit 1: Understanding deafness and manual option in Indian scenario

a) Basic awareness of paradigms of deafness; communicative challenges / concerns; deafness with reference to culture, language, identity, minority status, deaf gain, literacy and inclusion
b) Difference between Indian sign language (ISL) and Indian sign system (ISS); myths and facts
c) 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

a) Monitoring and measuring development of ISL/ ISS in students: receptive and expressive mode
b) Training and guidance for families/teachers for tuning home and mainstream school environments: current scenario and strategies
c) Manual communication: do's and don'ts

Unit 3: ISL in daily communication & skill development challenges

a) Need for 'Motherese' (tuning language to suit young children) and age appropriate discourse with children with appropriate language,
b) Manual form of communication to express suprasegmentals and emotions
c) Measures to be taken to while using manual form of communication in groups.

Unit 4: Method of teaching ISL and factors affecting ISL

a) Methods in teaching ISL for different age groups (such as congenital hearing loss during earlier childhood vs. adolescents / adults with acquired hearing loss.
b) Challenges in ISL
c) Grammatical differences between different spoken Indian languages and ISL.

Unit 5: Different systems of manual language

a) American sign language
b) Finger spelling

c) Variants of Indian sign language
d) Manual language in other countries

Recommended reading

- Indian Sign Language Dictionary (2002). Sri Ramakrishna Mission Vidhyalaya. International Human Resource Development Centre for the disabled, Coimbatore.

B 4.7 Clinicals in Speech-language Pathology

Hours 120 Marks 100 : Credits 4

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 analyze voice production mechanism. (acoustic/ aerodynamic methods / visual examination of larynx/ self-evaluation)
3. Different samples /procedures required to analyze 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.

Evaluation:

- Internal evaluation shall be based on attendance, clinical diary, log book and learning conference.
- External evaluation: Spot test, OSCE, Record, Viva-voce, case work

B 4.8 Clinicals in Audiology

Hours 120 Marks 100 : Credits 4

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 earmold 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 molds
3) How to preselect hearing aid depending on listening needs and audiological findings on at least 5 clinical situations (case files)
4) How to select test battery depending on case history and basic audiological information – 3 situations

Do:

1) Tone decay test – 2 individuals with sensorineural hearing loss
2) Stenger 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

Evaluation:

1) Internal evaluation shall be based on attendance, clinical diary, log book and learning conference.
2) External evaluation: Spot test, OSCE, record, viva-voce, case work

Semester 5

B 5.1 Motor Speech Disorders in Children

Hours 60 Marks 100: Credits 4

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

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

Unit1: Neuro-developmental processes in speech production and motor speech disorders

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

Unit 2: Assessment of motor speech disorders in children

a) Case history and developmental neurological evaluation – primitive postural and oro-pharyngeal reflexes, cranial nerve examination
b) Assessment of oral sensory and motor capacity – oral peripheral mechanism examination, neuro- muscular status
c) Assessment of speech sub-systems – quantitative and qualitative
d) Assessment of speech intelligibility and comprehensibility
e) Assessment of associated problem
f) Speech assessment with specific reference to childhood apraxia of speech – phonetic and phonemic inventory, phonotactics and syllable sequencing, variability of errors, speech intelligibility, fluency and prosody
g) Test materials – checklist for childhood apraxia of speech, screening test for developmental apraxia of speech

h) Protocols for non-verbal and verbal praxis specific to Indian languages
i) Differential diagnosis – dysarthria and other developmental disorders
j) Differential diagnosis – childhood apraxia of speech and other developmental disorders

Unit 3: Management of childhood dysarthria

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

Unit 4: Management of childhood apraxia of speech

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

Unit 5: Feeding and swallowing disorders in children

a) Embryology- periods and structures of development
b) Anatomical structures of swallowing- upper aero digestive system, anatomic difference between adults and children
c) Physiology of swallowing- swallow phases, neural control of swallowing, reflexes related to swallowing, suckling and sucking, airway and swallowing
d) Terms involved in dysphagia and development of feeding skills
e) Causes of dysphagia in children
f) Signs and symptoms of dysphagia in children

g) Assessment – inferences from neural developmental assessment, cranial nerve examination, assessment scales, nutritive and non-nutritive assessment, instrumental assessment (VFS, cervical auscultation), gastrointestinal evaluation
h) Management: positioning, oral- motor treatment, team approach, non-oral feeding, transitional feeding, modifications in feeding
i) Role of speech-language pathologist in neonatal intensive care with reference to feeding and swallowing

Practicum

a) With the help of models & charts identify the motor control centers in the brain.
b) Perform oro-motor examination in five children and adults and compare
c) Identify oro-motor reflexes (rooting, suckling, & phase bite) in 5 infants.
d) Demonstrate normal posture and breathing patterns required for varied speech tasks. Alter the postures and breathing patterns and notice changes in speech patterns.
e) Assess DDK rate in five typically developing children.
f) Rate intelligibility of speech in five typically developing children. Discuss factors that influenced speech intelligibility and their ratings.
g) 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.
h) Perform oro-motor exercises – isotonic and isometric. Discuss strategies to modify exercises for children.
i) 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.
j) Observe feeding and swallowing skills in children of different age groups: 2 newborns; 2 infants, 2 toddlers, and 2 older children. Identify the differences in feeding methods, food consistencies, texture, quantity, feeding habits, feeding appliances.

Recommended reading

- 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.
- Hardy, J. (1983). Cerebral Palsy. Remediation of Communication Disorder Series by F.N. Martin. Englewood Cliffs, Prentice Hall Inc.
- 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.

B 5.2 Structural Anomalies and Speech Disorders

Hours 60 Marks 100: Credits 4

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

a) understand the characteristics of disorders with structural anomalies including speech
b) evaluate and diagnose the speech characteristics seen in these disorders
c) learn about the techniques for the management of speech disorders in these conditions

Unit 1: Speech characteristics of persons with cleft lip and palate

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

Unit 2: Assessment and management of cleft lip and palate speech

a) Team of professionals in the management of persons with cleft lip and palate: their roles in diagnosis and management.
b) Assessment of persons with cleft lip and palate for speech language functions:
c) Subjective assessment of speech characteristics and speech intelligibility: Proforma, tests, scales and others.
d) Objective assessment of phonatory, resonatory and articulatory features
e) Diagnosis and differential diagnosis of speech related functions
f) Subjective assessment of language and communication functions
g) Reporting test results using Universal Parameters
h) Management of persons with cleft lip and palate
i) Surgical and prosthetic management
j) Techniques and strategies to correct speech sound disorders
k) Techniques and strategies to improve feeding
l) Counselling and guidance

Unit 3: Structural anomalies of tongue and mandible - Characteristics, assessment and management

a) Types, classification and characteristics of structural anomalies of tongue and mandible
b) Causes for structural anomalies of tongue and mandible
c) Team of professionals in the management of persons with structural anomalies of tongue and mandible and their roles
d) Associated problems in persons with structural anomalies of tongue and mandible:
   - Speech
   - Feeding
   - Dental and occlusion

- Psychological and others

e) Management of persons with structural anomalies of tongue and mandible
   - Surgical and prosthetic management
   - Techniques and strategies to improve speech intelligibility
   - Techniques and strategies to improve feeding
   - Counselling and guidance for persons with glossectomy and mandibulectomy

Unit 4: Characteristics and assessment of laryngectomy

a) Causes, symptoms and classifications of laryngeal cancers
b) Team of professionals in the management of persons with laryngeal cancer
c) Surgery for laryngeal cancers: types and outcome
d) Associated problems in layngectomee individuals
e) Assessment of speech and communication skills of layngectomee individuals: Pre and post-operative considerations

Unit 5: Management of speech and communication in persons who have undergone laryngectomy

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

Practicum

a) Identify the different types of cleft lip and palate by looking at illustrations and images
b) 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.
c) 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.
d) Perform oral peripheral mechanism examination on 10 individuals and document the structure and functions of the articulators.
e) Analyze the different types of occlusion in 10 individuals.
f) Identify the type of glossectomy by looking at pictures/illustrations.
g) Identify the different types of prosthesis in the management of head and neck cancer.
h) Analyze the speech profile of 5 individuals with laryngectomy.
i) Identify parts of an artificial larynx and explore its use.
j) Prepare a checklist / pamphlet illustrating care of the stoma and T- tubes in vernacular

Recommended reading

- 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
- Yvonne, E (Ed) (1983). Laryngectomy: Diagnosis to rehabilitation. London: Croom Helm Ltd

B 5.3 Pediatric Audiology

Hours 60 Marks 100: Credits 4

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

a) describe auditory development
b) list etiologies and relate them to different types of auditory disorders that may arise
c) explain different hearing screening/identification procedures and their application, and
d) elaborate on different aspects of pediatric behavioral and physiological / electrophysiological evaluation

Unit 1: Auditory development

a) Review of Embryology of the ear
b) Development of auditory system from periphery to cortex
c) Neuroplasticity
d) Prenatal hearing
e) Normal auditory development from 0-2 years
f) Infant speech perception
g) Incidence and prevalence of auditory disorders in children

Unit 2: Auditory disorders

a) Congenital and acquired hearing loss in children
b) Permanent minimal and mild bilateral hearing loss
c) Impact on auditory skills, speech-language, educational and socio-emotional abilities
d) Moderate to profound sensor neural hearing loss
e) Unilateral hearing loss
f) Auditory neuropathy spectrum disorders
g) Central auditory processing disorders
h) Pseudohypacusis
i) Auditory disorders in special population and multiple handicap

Unit 3: Early identification of hearing loss

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

Unit 4: Pediatric assessment I

a) Behavioral observation audiometry
b) Conditioned orientation reflex audiometry
c) Visual reinforcement audiometry, TROCA, play audiometry
d) Pure tone audiometry in children: Test stimuli, response requirement and reinforcement
e) Speech audiometry (SRT, SDT); Speech recognition and speech perception tests developed in India)
f) Bone conduction speech audiometry
g) Immittance evaluation in pediatric population
h) Central auditory processing disorders assessment

Unit 5: Pediatric assessment II

a) Recording and interpretation of OAE in pediatric population
b) Factors affecting OAE in pediatric population
c) Recording and interpretation of click evoked and tone burst evoked ABR in pediatric population
d) Factors affecting ABR in pediatric population
e) Recording ASSR in pediatric population
f) Recording AMLR, ALLR in pediatric population
g) Assessment of hearing loss in special population
h) Diagnostic test battery for different age groups
i) Diagnosis and differential diagnosis

Practicum

a) Observe a child with normal hearing (0-2 years) in natural settings. Write a report on his/her responses to sound
b) 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
c) Administer HRR on at least 3 newborns and interpret responses
d) Based on the case history, reflect on the possible etiology, type and degree of hearing loss the child may have
e) Compare ABR wave forms in children of varying ages from birth to 24 months
f) 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
g) Observe OAE in a child with normal hearing and a child with hearing loss. Write a report on the instrumentation, protocol used and interpretation
h) 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
i) 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
j) 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

Recommended reading

- Finitzo, T., Sininger, Y., Brookhouser, P., & Village, E. G. (2007). Year 2007 position statement: Principles and guidelines for early hearing detection and intervention programs. Pediatrics, 120(4), 898–921. http://doi.org/10.1542/peds.2007-2333
- Madell, J.R., & Flexer, C. (2008). Pediatric 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 Pediatric Audiology, San Diego: Plural Publishing

B 5.4 Educational Audiology

Hours 60 Marks 100: Credits 4

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

a) describe the effects of hearing loss on development and learning
b) decide on the kind of intervention for the child with hearing loss in the school
c) decide on the appropriate educational placement for the child
d) apply principles of effective management in classroom/school settings, and
e) understand the roles of educational agencies and legal agencies for children with disability in India

Unit1: Importance of early identification and different approaches for communication

a) Classification of hearing impairment and its importance in educational placement
b) Role and responsibilities of Educational Audiologist and team members
c) Early identification and its importance in aural rehabilitation.
d) Unisensory vs. multisensory approach
e) 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)
f) Total communication

Unit 2: Methods of teaching language for children with hearing impairment

a) Methods of teaching language to the hearing impaired and its application in Indian languages
b) Natural method: maternal reflective method, Groth's method
c) Structured method (grammatical method); Fitzgerald key, box technique APPLE TREE, Patterning
d) Combined method (Natural and structured)
e) Computer aided method.

Unit 3: Educational placement

a) Educational placement of hearing impaired children: Preschool training, Integration, Partial integration, Segregation: day school vs. residential school, Inclusive vs. integrated school.
b) Criteria for recommending the various educational placements
c) Criteria for selecting the medium of instruction
d) Factors affecting their outcome.
e) Educational problems of the individuals with hearing impairment and the measures taken to overcome the problems in India

Unit 4: Modifications in setting-up classrooms

a) Barriers to acoustic accessibility: distance, signal to noise ratio, reverberation
b) Setting-up classrooms and the modifications for the individuals with hearing impairment: Acoustic, lighting, class strength and amplification
c) Signal to noise ratio enhancing technologies (personal and group amplification devices): personal FM, loop systems, desktop group systems, blue tooth connectivity
d) Managing the listening environment in schools for infants and toddlers

Unit 5: Laws and policies for educating and counselling parents

a) Educational laws and policies with respect to education for children with disability by government and non-government agencies
b) 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
c) Education for children with multiple disabilities
d) Counseling the parents, teachers and peers regarding the education of the individuals with hearing impairment in India
e) Home training – need, preparation of lessons, long term vs short term plans and activities, correspondence programs, follow-up.

Recommended reading

- Lynas, W. (2000). Communication options. In J. Stokes (Ed). Hearing impaired infants – Support in the first eighteen months. London: Whurr Publishers Ltd.
- Hull, R.H. (Ed) (1982). Rehabilitative Audiology. New York: Grune and Stratton Inc.
- 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.
- 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.
- Cheryl, J., & Jane, S. (2011). Educational Audiology Handbook, Edition 2, Publisher Cengage Learning.
- 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.

B 5.5 Clinical Counselling

Hours 30 Marks 50 : Credits 2

Objectives: At the end of the course, the students should be able to

a) understand counselor-client relationships in the context of training and rehabilitation of individuals with disorders in human communication,
b) aware of techniques of counselling,
c) aware of the importance of counselling in the context of management
d) aware of the ethical aspects of clinical counselling
e) be able to integrate counselling-based aspects in research

Unit 1: Basics of clinical counselling

a) Guidance and counselling:
   - Meaning, nature & scope of counselling
   - Principles and goals of counselling
   - Types and techniques: individual and group counselling
   - Special focus on clinical counselling: need and applications of clinical counselling
b) Counselling of persons across life span
c) Counselling across relationships

Unit 2: Professional counselling: portrait of effective counselors

a) Qualifications and qualities
b) Micro and macro skills and competencies
c) Expectations and limitations in professional counselling: Tips for improvement and Ethical issues

Unit 3: Family counselling

a) Techniques of family counselling
b) Ethics of family counselling
c) Problems encountered in counselling
d) Content of counselling

Unit 4: Clinical counselling

a) Stages in Clinical Counselling
b) Principles in clinical practice: Directive and non-directive
c) Approaches and tools for clinical counselling
d) Do's and don'ts of clinical counselling
e) Human rights, enablement and empowerment through counselling
f) Alternate/holistic forms of counselling
g) Scientific basis, cultural constraints and ethical issues in counselling.

Unit 5: Application of counselling

a) Outline of conditions requiring clinical counselling
b) Organic brain syndromes
c) Functional disorders
d) Psychotic and neurotic disorders
e) Disabilities & impairments: Personality & conduct disorders
f) Special populations: HIV/AIDS, school dropouts, chronic or terminally ill

Recommended reading

- Introduction to Counseling and Guidance, 6th ed., Gibson, R.L. & Mitchell M.H. (2006), Pearson, New Delhi
- Shames, G.H. (2000). Counseling the communicatively disabled and their families. Boston: Allyn and Bacon
- Counseling and Psychotherapy: theories and interventions. 3rd ed. Capuzzi, D and Gross D. R. (2003). Merrill Prentice Hall: New Jersey
- Theories of Psychotherapy & Counseling, 2nd ed., Sharf, R.S. (2000). Brooks/Cole: USA

B 5.6 Clinicals in Speech-language Pathology

Hours 120 Marks 100 : Credits 4

General considerations:

1) Exposure is primarily aimed to be linked to the theory courses covered in the semester.
2) 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 persons who have undergone laryngectomy 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.

Evaluation:

1) Internal evaluation shall be based on attendance, clinical diary, log book and learning conference.
2) External evaluation: Spot test, OSCE, record, viva-voce, case work

B 5.7 Clinicals in Audiology

Hours 120 Marks 100 : Credits 4

General considerations:

1) Exposure is primarily aimed to be linked to the theory courses covered in the semester.
2) 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) 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 sensorineural hearing loss
3) How to 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

Evaluation:

1) Internal evaluation shall be based on attendance, clinical diary, log book and learning conference.
2) External evaluation: Spot test, OSCE, record, viva-voce, case work

Semester 6

B 6.1 Motor Speech Disorders in Adults

Hours 60 Marks 100 : Credits 4

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

a) understand the characteristics of acquired motor speech disorders in adults
b) evaluate and diagnose speech characteristics in acquired motor speech disorders
c) learn about the techniques for the management of speech and related errors in acquired motor speech disorders

Unit 1: Causes and characteristics of dysarthria

a) Definition, etiology and classification of acquired dysarthria
b) General, speech and feeding related characteristics of acquired dysarthria with and without genetic underpinnings:
c) Vascular lesions: dysarthria following stroke/CVA, cranial and peripheral nerve palsies
d) Infectious condition of the nervous system: dysarthria following meningitis, encephalitis, polyneuritis, poliomyelitis, neurosyphilis.
e) Traumatic lesions: dysarthria following TBI.
f) Toxic conditions of the nervous system: dysarthria following exogenic and endogenic toxic conditions of the nervous system.
g) Anoxia of the nervous system: dysarthria following anoxic conditions
h) Metabolic disorders affecting nervous system: dysarthria following metabolic conditions that affect the nervous system, Wilson's disease etc.
i) Idiopathic causes: dysarthria following idiopathic causes
j) Neoplastic lesions of nervous system: dysarthria following neoplastic lesions in the nervous system
k) Demyelinating and degenerative conditions: Huntington's chorea, Parkinson's, multiple sclerosis, motor neuron diseases

Unit 2: Assessment and diagnosis of dysarthria

a) Subjective assessment of dysarthria:
   - Assessment of respiratory, phonatory, resonatory, articulatory errors
   - Assessment of prosodic features
   - Assessment of speech intelligibility
   - Scales, protocols and tests used for subjective assessment of dysarthria
b) Instrumental analysis of speech in dysarthria: acoustic, kinematic and physiological
c) Advantages and disadvantages of subjective and instrumental procedures in the assessment of dysarthria in adults
   - Differential diagnosis of acquired motor speech disorders in adults:
   - Dysarthria and verbal apraxia
   - Dysarthria and functional articulation disorders

- Dysarthria and aphasia
- Apraxia of speech and aphasia
- Dysarthria from other allied disorders such as agnosia, alexia, agraphia etc.
- Apraxia from other allied disorders such as agnosia, alexia, agraphia etc.
- Assessment of feeding, swallowing and related issues in persons with dysarthria

Unit 3: Management of dysarthria

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

Unit 4: Assessment and management of apraxia in adults

a) Definition, etiology and classification of acquired apraxia
b) Characteristics of nonverbal apraxia's in adults
c) Characteristics of verbal apraxia's in adults
d) Subjective assessment strategies: standard tests and scales, protocols and behavioral profiles
e) Instrumental analysis of the speech of apraxia in adults: acoustic, kinematic and physiological
f) Management Approaches for verbal & nonverbal apraxia: principles and strategies

Unit 5: Management related issues in motor speech disorders

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

Practicum

a) Identify the cranial nerves and mention its origin and insertion from a picture/ model. Demonstrate methods to assess the cranial nerves.
b) Assess the respiratory system using speech and non-speech tasks in 10 healthy adults.
c) Assess the phonatory system using subjective and acoustic analysis in 10 healthy adults.
d) Looking at a video identify the clinical signs and symptoms of different neurological conditions resulting in Dysarthria.

e) Record the speech sample of 5 normal adults and compare with the audio sample of individuals with Dysarthria.
f) Administer Duffy's intelligibility rating scale on 5 healthy adults.
g) Administer Frenchay's Dysarthria Assessment on 5 healthy adults.
h) Demonstrate activities to improve the functions of speech subsystem.
i) Identify the signs of UMN and LMN based on a video.
j) Prepare a low tech AAC for functional communication for an individual with apraxia.

Recommended reading

- 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.
- Dworkin, P. J. (1991). Motor Speech Disorders: A Treatment Guide. St. Louis: 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.

B 6.2 Language Disorders in Adults

Hours 60 Marks 100 : Credits 4

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

a) understand the characteristics of language disorders in adults
b) evaluate and diagnose speech characteristics in adults with language disorders
c) learn about the techniques for the management of speech and related errors in language disorders seen in adults

Unit 1: Neural bases of language

a) Correlates of language functions: neuroanatomical, neurophysiological, neurobiological, and cognitive
b) Neurolinguistic models of language processing - connectionist models. hierarchical models, global models, process models, computational models
c) Language process in bi/multilingualism
d) Language processing in right hemisphere

Unit 2: Language disorders in adults

a) Definition, causes and characteristics of speech, language and cognition in aphasia: cortical and subcortical aphasia, primary progressive aphasia, traumatic brain injury, right hemisphere damage, schizophasia, dementia
b) Assessment and differential diagnosis of various language disorders seen in adults

Unit 3: Assessment and diagnosis of language disorders

a) Assessment of the following in aphasia, primary progressive aphasia, traumatic brain injury, right hemisphere damage, schizophasia and dementia
b) Linguistic behavior including speech: scales, tests, protocols
c) Assessment of cognitive, social, behavioral characteristics
d) Medical investigation: neuroimaging

Unit 4: Management of language disorders

a) Medical, linguistic and programmed intervention for persons with aphasia: cortical and subcortical
b) Primary progressive aphasia, traumatic brain injury, right hemisphere damage, schizophasia, dementia

Unit 5: Rehabilitation issues relating to adult language disorders

a) Team involved in the rehabilitation of persons with adult language disorders

b) Factors influencing the assessment and intervention for language in the context of bilingual and multilingual influences
c) Factors influencing the assessment and management of language in persons who are preliterate, illiterate and literate
d) Assessment of quality of life
e) Recovery patterns and prognosis in adults with language disorders
f) Age related influence in adults with language disorders
g) Counselling and guidance for adults with language disorders
h) Generalization and maintenance issues in adults with language disorders
i) Augmentative and alternative strategies for adults with language disorders

Practicum

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

Recommended reading

- 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.

B 6.3 Environmental Audiology

Hours 60 Marks 100 : Credits 4

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

a) explain the effects of noise on various systems in the body, with special reference to auditory system.
b) select appropriate test/s and assess the effects of occupational noise.
c) independently assess various kinds of noise in the environment and its possible effects.
d) identify people at-risk of developing occupational hearing loss and plan effective hearing conservation program.
e) assess eligibility for compensation in individuals with NIHL.

Unit 1: Overview, types and effects of environmental noise

a) Definition of noise, sources –community, industrial, music, traffic and others, types – steady and non-steady
b) 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.
c) Non-auditory effects of noise exposure:
   - Physiological/somatic including vestibular effects,
   - Psychological responses,
   - Stress and health, sleep,
   - Effects of audio analgesia on CNS and other senses,
   - Effects on work efficiency and performance.

Unit 2: Audiological evaluation of individuals exposed to occupational noise

a) Case history
b) Pure tone audiometry in NIHL
   - Hearing screening and correction for presbycusis
   - Baseline and periodic monitoring tests,
   - Brief tone audiometry,
   - Extended high frequency audiometry
c) Speech audiometry in NIHL
   - Speech perception tests in quiet and in presence of noise
   - Filtered speech tests and time compressed speech tests
d) Other audiological evaluations: immittance evaluation, AEP, OAE, Tests for susceptibility.

Unit 3: Noise and vibration measurements

a) Instrumentation
b) Procedure for indoor and outdoor measurement of ambient noise, traffic noise, aircraft noise, community noise and industrial noise
c) Factors affecting noise and vibration measurement
d) Reporting noise measurement including noise mapping.
e) Noise control measures

Unit 4: Hearing conservation

a) Need for hearing conservation program
b) Steps in hearing conservation program
c) Noise control: Engineering and administrative controls
d) Hearing protective device (HPDs)
f) Types: ear plugs, ear muffs, helmets, special hearing protectors, merits and demerits of each type
g) Properties of HPDs: attenuation, comfort, durability, stability, temperature, tolerance
h) Outcome measures and evaluation of attenuation characteristics of HPDs
e) Noise conditioning/ toughening

Unit 5: Legislations related to noise

a) DRC – definition, historical aspects, use of TTS and PTS, information in establishing DRC, CHABA, AFR 160-3, AAOO, ASA-Z 24.5, damage risk contours, Walsh-Healey Act, OSHA, EPA, Indian noise standards
b) 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
c) Indian acts/regulations, American acts.

Recommended reading

- 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.

B 6.4 Aural Rehabilitation

Hours 60 Marks 100 : Credits 4

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

a) explain the impact of hearing impairment on auditory development and spoken language communication in children
b) describe the impact of hearing loss on the quality of life of adults with hearing impairment
c) decide on the communication options for children, adults and older adults with hearing impairment
d) design activities for auditory learning at different levels for different age groups
e) recognize factors that impair communication and suggest facilitative and repair strategies, and
f) select appropriate management option/s for tinnitus and hyperacusis

Unit 1: Introduction to aural rehabilitation

a) Definition
b) Scope of aural rehabilitation in children and adults
c) Prevalence of hearing loss in children (global and Indian data)
d) Prevalence of hearing loss in adults (global and Indian data)
e) Relationship between audiometric data, hearing difficulties and amplification considerations
f) Quality of life and impact on income, education, employment;
g) Assessing communication handicap: interviews, questionnaires
h) Vocational rehabilitation

Unit 2: Aural rehabilitation for children

a) Role of audition in speech and language development in normal children and its application in education of individuals with hearing impairment
b) Definitions and historical background: auditory training vs. auditory learning
c) Auditory oral approach and auditory verbal therapy
d) Manual/sign language: Indian and global context
e) Cued speech and total communication
f) Listening devices hearing aid/cochlear implant
g) Early intervention programs: individual vs. group
h) Speech reading for children
i) Management of children with special needs: deaf-blind child/ child with intellectual disability
j) Overview on management of children with central auditory processing problems

Unit 3: Aural rehabilitation for adults

a) Principles of aural rehabilitation in adults
b) Psychological impact of hearing loss and support through counselling
c) Auditory training
   - Candidacy for auditory training
   - Benefits of auditory training
d) Speech Reading
   - Definitions and need for speech reading
   - Visibility of speech sounds – audio-visual perception vs. visual perception
   - Visual perception of speech by individuals with hearing impairment
   - Overview of speech reading tests (analytic vs. synthetic tests)
   - Factors influencing speech reading.
   - Speech reading activities
e) Aural rehabilitation programs: Individual vs. group (auditory training and speech reading)
f) Aural rehabilitation for older adults

Unit 4: Communication strategies

a) Factors that influence the reception of spoken message
b) Communication strategies: Facilitatory and repair strategies
c) Repairing a communication breakdown
d) Conversational styles
e) Communication strategies training formal instruction, guided learning, real world practice

Unit 5: Management of tinnitus and hyperacusis

a) Audiological management of tinnitus
   - Overview on Models related to tinnitus management
   - TRT, Masking, others
   - Devices used for management
b) Audiological management of hyperacusis

Practicals

a) Evaluation of baseline auditory skills
b) Preparation of lesson plans for home training.
c) Carrying out auditory learning activities on clients with various degrees of hearing impairment
d) Use of communication strategies on clients
e) Observe the speech and language characteristics of individuals with hearing impairment
f) Knowledge on evaluating baseline auditory skills, lesson plan, concise report
g) Role play of auditory learning, speech reading, communication strategies
h) Observation of management of APD and Multiple disability

i) Observation of management of Tinnitus and Hyperacusis

Recommended reading

- 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.
- Jastreboff. P. J & Hazell. J. W. P (2004). Tinnitus retraining therapy-implementing the Neurophysiological model. United Kingdom; Cambridge University Press
- Montano, J. J. & Spitzer, J. B. (2014). Adult Audiologic Rehabilitation. 2nd Ed. Plural Publishing Inc.
- Tye-Murray, N. (2015). Foundations of Aural Rehabilitation. 4th Ed. Cengage Learning
- Tyler. R (2000). Tinnitus handbook. Unites states of America; Singular Thomson 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 Bacon.

B 6.5 Speech-language Pathology & Audiology in Practice

Hours 45 Marks 100 : Credits 3

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

a) list and describe the highlights of legislations relating to speech and hearing disabilities
b) incorporate ethical practices in professional activities.
c) provide information on the facilities available for the speech and hearing disabled including welfare measures and policies of government.
d) describe different strategies to create awareness of speech and hearing impairment and facilities available to take care of them.
e) prescribe criteria for different clinical setups for the management of speech and hearing disorders, with reference to their requirement, protocols and role and responsibility of the professionals.
f) describe terminology, technology and methods used in public education, clinical practice including tele practice and camps and their application in speech and hearing service delivery,
g) aid and advice governments/institutions on societal and industrial factors that would adversely impact speech and hearing faculty of human beings

Unit 1: Introduction to the speech –language pathology and audiology in practice

a) Epidemiology of speech and hearing disorders
b) Need for rehabilitation and steps involved in rehabilitation.
c) ICD and ICF
d) Levels of prevention: primary, secondary and tertiary
e) National programs and efforts by the professionals including India in the process of rehabilitation.
f) Organizing camps, screening (need, purpose, planning, organizing and conducting including providing remedial measures to the needy)
g) Public education and information (media, radio broadcasts, street plays)
h) Functions of speech & hearing centers in different set-ups
i) Private practice, evidence based practice
j) Government organizations, NGOs
k) Role of itinerant speech therapist, Anganwadis, resource teachers etc.
l) Community based rehabilitation and other methods of integration of the disabled in the society.

Unit 2: Public laws related to disability

a) Scope of practice in speech and hearing (national & international bodies)
b) Professional ethics
c) Rehabilitation Council of India and disability related acts in India
d) Consumer Protection Act and other public laws.
e) Welfare measures available for persons with speech language and hearing disability

f) Certification of persons with speech language and hearing disability
g) 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

a) Setting up a speech-language and hearing center
b) Organization of space, time, personnel and audiometric rooms.
c) Budgeting and, financial management
d) Purchase formalities
e) Recruiting personnel – rules and salary
f) Leave rules and other benefits for professionals and personnel
g) Documents and record keeping – different types
h) Public education methods
i) Organizing workshops, seminars and conferences.

Unit 4: Scope and practice of tele-assessment and rehabilitation

a) Introduction to tele-health: definition, history of tele-health
b) Terminologies-tele-health, tele medicine, tele practice
c) Connectivity: internet, satellite, mobile data
d) Methods of tele-practice-store and forward and real time
e) Ethics and Regulations for tele practice
f) Requirements / technology for tele- practice: web-based platforms, video conferencing, infrastructure
g) Manpower at remote end and speech-language pathologist/audiologist end, training assistants for tele-practice
h) Audiological screening using tele-technology: new born hearing screening, school screening, community screening, counselling.
i) Diagnostic services using tele-technology: video otoscopy, pure tone audiometry, speech audiometry, otoacoustic emission, tympanometry, auditory brainstem response.

Unit 5: National and international Acts and programs

a) Scope of practice in speech and hearing
b) National – ISHA & international associations – ASHA, BSA among others)
b) Professional ethics – national and global stipulations
c) Legislations and conventions relating to disability: need and historical aspects
d) Classification of hearing impairment and disability certification,
e) Rehabilitation Council of India Act (1992) and its amendments
f) Person with Disability Act (2016)
g) National Trust Act (1999)
h) Right to Education (2012)
i) Biwako Millennium framework (2003) and Salamanca Statement (1994)

j) UNCRPD, World hearing day, World disability day, WHO program early identification of hearing impairment
k) Concept of barrier free access and universal design relating to individuals with hearing impairment

Practicum

1. Attend camps, seminars, workshops, conferences, school screening, community based screening.
2. Undertake the activities such as "Dangerous decibel" program (http://dangerousdecibels.org/)
3. Visit a 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

Recommended reading

- 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/
- https://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

B 6.6 Indian Music

Hours 30 No marks : No credits

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

a) have knowledge on the basics of Indian music systems,
b) understand the similarities/differences between singing and speaking,
c) apply the dynamics of voice production and change in singing to speech therapy,
d) design vocal hygiene programs for professional voice users, and
e) understand the importance of hearing and perception to singing.

Unit 1: Introduction

a) Fine arts in general, music in particular. place of music in life
b) Indian systems of music - Carnatic, Hindustani and others
c) History of Carnatic and other systems of Indian music
d) Comparative study of Carnatic and Hindustani styles of music
e) Basic tones of Indian music
f) Evolution of musical Scales and raagas
g) Definition and detailed explanation of some technical terms relating to music - sangeetha, adhara shruthi, nada, swaras, raga etc

Unit 2: Voice and related systems in music

a) Requirement of voice in singers
b) Puberty and voice - implications for singers
c) Characteristics of musical sounds - pitch, loudness and quality of voice in singing
d) Phonation for speech and voice - differences between the act of speaking and singing. Coordination of respiratory, phonatory, resonatory and articulatory systems in speaking and singing.

Unit 3: Factors influencing voice and singing

a) Posture, respiration and music
b) Singing - differences between men and women
c) Suprasegmental features of speech and singing
d) Factors relating to music that affect voice

Unit 4: Professional voice care

a) Usage of voice for speaking and singing – effective use of voice, voice abuse/misuse
b) Professional voice users - Singers
c) Problems faced by singers - short and long term
d) Vocal hygiene tips: Do’s and don’ts for professional singers

Unit 5: Music and hearing

a) Role of hearing for musicians
b) Enhanced auditory perception in trained musicians
c) Adverse effect of music on hearing – music induced hearing loss
d) Prevention of music induced hearing loss

Recommended reading

- Banerjie, M. (2013). New Approach and Possibilities of Voice Culture in Hindustani Classical Music. Retrieved
- Bunch, M (1982). The dynamics of the singing voice. NY: Springer Verlag
- Donna Frazier and Roger Love (1999). Set Your Voice Free: How to Get the Singing Or Speaking Voice You Want. Self-help book https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0155084
- Johan Sundberg (1990). What's so special about singers? Journal of Voice 4(2), 107-119
- Johan Sundberg (1993). Breathing behavior during singing. The NATS Journal.
- Kate DeVore and Starr Cookman (2009). The Voice Book: Caring For, Protecting, and Improving Your Voice. Chicago Review Press
- Morgan A. Selleck, Robert T. Sataloff (2014). The Impact of the Auditory System on Phonation: A Review. Journal of Voice, 28 (6), 688–693 DOI: https://www.jvoice.org/article/S0892-1997(14)00068-X/fulltext
- R.Leanderson J.Sundberg (1988). Breathing for singing. Journal of Voice,2 (1),2-12. https://www.jvoice.org/article/S0892-1997(88)80051-1/pdf
- Robert Caldwell and Joan Wall (2016). Mastering the Fundamentals: Body, breath, phonation, and resonance. https://www.dictionforsingers.com/mastering-the-fundamentals-body-breath-phonation-and-resonance.html
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- Sataloff R.T. (1991). Professional voice: The science and art of clinical care. NY: Ravens Press Ltd.
- Sauro Salomoni, Wolbert van den Hoorn, Paul Hodges (2016). Breathing and Singing: Objective Characterization of Breathing Patterns in Classical Singers http://shodhganga.inflibnet.ac.in/bitstream/10603/7570/11/11_chapter%207.pdf

B 6.6 Yoga

Hours 30 No exam : No credits

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

a) explain the fundamentals of yoga,
b) explain the relevance of yoga to speech-language therapy,
c) implement yoga as part of speech-language and hearing therapy, and
d) demonstrate basic yoga practices, and
e) explain the relationship between yoga concepts (respiration, posture, meditation) and speech-voice production.

Unit 1: Basis of yoga

a) History, development and practice
b) Basic principles and systems of yoga
c) Yoga and the body metabolism
d) Yoga and psychosocial behavior
e) Yoga, attention and cognition
f) The concept of yoga and health

Unit 2: Techniques and practice of yoga: breathing and body balance

a) Methods of Yoga, their basis and practice:
   - posture,
   - breathing
   - meditation (concentration technique),
   - relaxation
b) Indications for Yoga: Client characteristics
c) Therapeutic Application of Yoga
d) Effectiveness of Yoga as a therapy technique
e) Yoga and development of the persona – physical, mental, emotional, intellectual, and spiritual

Unit 3: Yoga for speech disorders

a) Coordination of respiration, phonation, and articulation.
b) Yoga for fluency disorders – Stuttering and cluttering
c) Yoga for voice disorders – Vocal strengthening, increasing respiratory support
d) Yoga for motor speech disorders in children (cerebral palsy, apraxia) and adults (dysarthria)
e) Research findings

Unit 4: Yoga and language disorders

a) Yoga for child language disorders:
   - Autism Spectrum Disorders (ASD)
   - Attention Deficit Hyperactivity Disorder (ADHD)
   - Specific Language Impairment (SLI)
   - Intellectual Disability (ID)
   - Learning Disability (LD)

b) Yoga for adult language disorders - Aphasia
c) Other neurological disorders
d) Research findings

Unit 5: Yoga and auditory-vestibular disorders

a) Yoga for tinnitus and hyperacusis
b) Yoga for Central Auditory Processing Disorders (CAPD)
c) Yoga for vestibular disorders
d) Yoga and family stress associated with children with deafness
e) Research findings

Recommended reading

- Balakrishnan, J.M. (2009). Yoga for stuttering: Unifying the voice, breath, mind and body to achieve fluent speech. Berkeley, CA: North Atlantic Books.
- Louise Goldberg (2013). Yoga therapy for children with autism and special needs. Published by W.W. Norton & Company, NY, USA.
- McCall T. Yoga as medicine: the yogic prescription for health and healing. New York: Bantam Books ; 2007
- Nagaratna, R., & Nagendra H. R. (2008). Yoga for positive health. Bangalore: Swami VivekanadaYoga Prakashana.
- Riley, D. (2004). Hatha yoga and the treatment of illness. Alternative Therapies in Health and Medicine, 10(2), 20–21.
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- William Damon, Richard M. Lerner, Deanna Kuhn (2006). Handbook of Child Psychology. 6th Edition, Vol. 2: Cognition, Perception, and Language. John Wiley &Sons, Inc., NJ
- Yoga for Voice Culture. (n.d.) Retrieved from http://indianmedicine.nic.in/writereaddata/linkimages/7196039746yoga%20for%20voice%20culture4.pdf
- Yoga for Voice Improvement. (n.d.) In Natural Therapy Pages. Retrieved from http://www.naturaltherapypages.co.nz/article/Yoga_for_Voice_Improvement

B 6.7 Community Based Rehabilitation

Hours 15 Marks 50 : Credits 1

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

a) explain the concept, principles and scope of community-based rehabilitation
b) learn the strategies for promoting public participation in CBR
c) apply suitable methods for preparing persons with disability for rehabilitation within the community
d) provide need-based training to persons with disabilities
e) develop an understanding of the role of government and global agencies in CBR
f) learn about the role of media in enhancing community participation

Unit 1: Introduction to community based rehabilitation (CBR)

a) Concept and definition of CBR
b) Principles of CBR
c) Difference between CBR and institutional living
d) Socio-cultural and economic contexts of CBR
e) Scope and inclusion of CBR in government policies and programs

Unit 2: Preparing Community and Persons with Disability for CBR

a) Awareness program: types and methods
b) Advocacy: citizen and self
c) Focus group discussion
d) Community based employment and higher education

Unit 3: Preparing persons with disability for CBR

a) Family counselling and family support groups
b) CBR and corporate social responsibility
c) School education: Person centered planning, and peer group support
d) Transition: Individual transition plan, development of self-determination and self-management skills
e) Community related vocational training
f) Skill Training for living within community

Unit 4: Role of media in enhancing community participation

a) Mass media and its role in mobilization of community-based rehabilitation
b) Strategies for community awareness and participation
c) Different modes (print, electronic, audio-visuals, word-of- mouth)
d) Effectiveness of each media for different target groups
e) Educators' use of mass media for community-based rehabilitation and education

Unit 5: Models of CBR

a) Models of CBR
b) Disability issues and CBR
c) Concepts/programs in speech and hearing appropriate for CBR
d) Well known CBR programs in India

Recommended reading

- WHO publications on CBR
  - https://www.who.int/disabilities/cbr/en/
  - https://www.who.int/publications/i/item/community-based-rehabilitation-cbr-guidelines
  - https://www.who.int/disabilities/cbr/cbr_indicators_manual/en/
  - https://www.who.int/disabilities/cbr/matrix/en/
  - https://www.who.int/disabilities/include/en/
- S Goel (2006). An Introduction to Community Based Rehabilitation Continuing Medical Education. The Internet Journal of Health, 6 (2), 1-4
- http://cbrresources.org/

B 6.7 Indian Sign Language

Hours 15 Marks 50 : Credits 1

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

a) discuss the two manual options with reference to Indian special schools.
b) discuss the relevant issues like literacy, training with reference to manual options.
c) describe manual options in the light of issues like language, culture and identity.

Unit 1: Understanding deafness and manual option in Indian scenario

a) Basic awareness of paradigms of deafness; communicative challenges / concerns; deafness with reference to culture, language, identity, minority status, deaf gain, literacy and inclusion
b) Difference between Indian sign language (ISL) and Indian sign system (ISS); myths and facts
c) 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

a) Monitoring and measuring development of ISL/ ISS in students: receptive and expressive mode
b) Training and guidance for families/teachers for tuning home and mainstream school environments: current scenario and strategies
c) Manual communication: do's and don'ts

Unit 3: ISL in daily communication & skill development challenges

a) Need for 'Motherese' (tuning language to suit young children) and age appropriate discourse with children with appropriate language,
b) Manual form of communication to express suprasegmentals and emotions
c) Measures to be taken to while using manual form of communication in groups.

Unit 4: Method of teaching ISL and factors affecting ISL

a) Methods in teaching ISL for different age groups (such as congenital hearing loss during earlier childhood vs. adolescents / adults with acquired hearing loss.
b) Challenges in ISL
c) Grammatical differences between different spoken Indian languages and ISL.

Unit 5: Different systems of manual language

a) American sign language
b) Finger spelling

c) Variants of Indian sign language
d) Manual language in other countries

Recommended reading

- Indian Sign Language Dictionary (2002). Sri Ramakrishna Mission Vidhyalaya. International Human Resource Development Centre for the disabled, Coimbatore.

B 6.8 Clinicals in Speech-language Pathology

Hours 120 Marks 100 : Credits 4

General considerations:

1) Exposure is primarily aimed to be linked to the theory courses covered in the semester.

2) 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 neuro-communication 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.

Evaluation:

1) Internal evaluation shall be based on attendance, clinical diary, log book and learning conference.
2) External evaluation: Spot test, OSCE, Record, Viva-voce, case work

B 6.9 Clinicals in Audiology

Hours 120 Marks 100 : Credits 4

General considerations:

1) Exposure is primarily aimed to be linked to the theory courses covered in the semester, however, not just limited to these areas.

2) 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. Carryout noise survey in Industry and community
2. Carryout mapping of cochlear implant in infants and children using both objective and subjective procedures
3. Troubleshoot 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

Evaluation:

1) Internal evaluation shall be based on attendance, clinical diary, log book and learning conference.
2) External evaluation: Spot test, OSCE, Record, Viva-voce, case work

Semester 7

B 7.1 Clinicals in Speech-language Pathology

Hours 320 Marks 100 : Credits 8

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:

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

B 7.2 Clinicals in Audiology

Hours 320 Marks 100 : Credits 8

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:

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

Semester 8

B 8.1 Clinicals in Speech-language Pathology

Hours 320 Marks 100 : Credits 8

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:

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

B 8.2 Clinicals in Audiology

Hours 320 Marks 100 : Credits 8

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:

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

Vice-Chancellor
Sri Devaraj Urs Academy of Higher Education & Research
Deemed to be University
Tamaka, Kolar

Annexure 3

Regulations governing Clinical Internship of the 4-year B.ASLP program at Sri Devaraj Urs Academy of Higher Education & Research, Tamaka: 2019-20

Objectives: The objectives of the clinical internship are to

a) facilitate transition from academic training to independent clinical responsibility,
b) provide additional inputs to attain and maintain competence in the clinical management of persons with communication disorders,
c) provide additional clinical training at other institutions in the country which have better infrastructure/clinical population than the parent institute,
d) initiate group and individual action focusing on prevention/early identification and intervention in individuals with speech, hearing and language impairments at the level of the individual, family and community, and
e) to provide training to understand the professional responsibilities and ethical practices including
   i) rights and dignity of patients,
   ii) referral to other professionals, and
   iii) professional obligations to peers/patients/families and the community at large.

Guidelines

1.0 Internship is mandatory

2.0 Duration: One academic year (2 semesters - 7 and 8).

3.0 **Eligibility**: Internship will start after the candidate completes all the academic and clinical training till the 6th semester. Students can start internship after the 6th semester exams. However, students who fail in their clinical exam of the 6th semester will have to discontinue internship.

4.0 Structure and duration of posting

4.1 The parent institute shall decide on the institutions where its students will be posted for internship. However, students can be posted for internship only at those institutions approved by the Rehabilitation Council of India.

4.2 Students will do internship at their parent institute for one semester and at an institute(s) outside the parent institute for one semester. Internship can be done at institutes like hospitals, special educational centers/schools, centers where clinical facilities for management of autism spectrum disorders, cochlear implantation, auditory verbal therapy, hearing aid services etc. are available. Centers which undertake empowering of mothers, centers for cerebral palsy, centers providing early identification and prevention programs, and centers for

learning disability can be considered. Attempts must be made to provide clinical training to students in a variety of set ups.

4.3 It shall be mandatory to provide additional clinical training to students in such areas as management of neurologically afflicted persons, prevention and early intervention programs, community-based rehabilitation, occupational health programs, structural abnormalities related to speech and hearing, etc.

5.0 Mode of supervision during internship: Supervision should generally be provided by a speech-language pathologist and audiologist. However, in institutes/centers where speech-language pathologists and audiologists are not available, supervision can be done by a specialist in allied areas like otolaryngology, neurology, mental health, pediatrics, among others.

6.0 Maintenance of records by students: Every student shall maintain records of the number of hours of clinical work as well as number of cases in different areas and institutions. This should be certified by the head of the institution or his/her nominee where the student is undergoing internship.

7.0 Attendance: Candidates should have an attendance of at least 90% during the internship period. Internship shall be extended by the number of days the student falls short of 90% attendance. Compensatory work for shortage of attendance must be completed before the final clinical exams of 8th semester.

8.0 Leave

8.1 Students can take 4 weeks of leave in each semester. More than 50 percent of the students, in any center, will not be allowed to avail leave at any point of time. The entire leave has to be availed at once.

8.2 The supervisor at the participating institution can sanction leave with intimation to the head of the department of speech pathology & audiology of the parent institution (SDUAHER).

9.0 Grading and evaluation of student: All internees will be assessed based on their attendance, performance during the postings and presentation of log books. Assessment shall be continuous throughout the internship period. The mode of assessment and frequency of assessment will be prescribed by the parent institute. The student is required to repeat those postings in which his/her performance is below 50% or as recommended by the supervisor at the participating institute.

10.0 Certification: There shall be a clinical examination at the end of each semester of the internship as prescribed in the scheme of examination. The parent institute will award a certificate after successful completion of the internship and clinical examination (7.1 & 7.2 and 8.1 & 8.2 in the scheme of examination). Supervised clinical hours spent

during internship shall be included in the clinical competence certificate issued to students.

11.0 **Award of degree**: The University shall award the degree only after the successful completion of clinical internship.

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