



UNIVERSITY OF MYSORE

M.Sc. (Speech-Language Pathology) CBCS and CAGP Regulations – 2025

1.0 Title and Commencement

- 1.1 These Regulations shall be called the University of Mysore regulations for Choice Based Credit System (CBCS) and Continuous Assessment Grading Pattern (CAGP) for M.Sc. (Speech-Language Pathology) Programme. These Regulations shall come into force from the Academic Year **2025-26**.

2.0 Duration of the program

- 2.1 Duration of the program: 4 Semesters

Note: Each semester shall extend over a minimum period of **eighteen weeks, excluding examination days**.

3.0 Definitions

3.1 Course Every course offered will have three components associated with the teaching-learning process of the course, namely (i) Lecture – L (ii) Tutorial- T (iii) Practicum (Clinical) - P, where

L stands for Lecture session.

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

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

A course shall have either or all the above components.

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

Different courses of study are labelled and defined as follows:

3.2 Core Course

A course which should compulsorily be studied by a **student** as a core requirement is termed as a Core course.

- 3.2.1 A Core course may be a **Soft Core** if there is a choice or an option for the **student** to choose a course from a pool of courses from the main discipline / subject of study or from a sister/related discipline / subject which supports the main discipline / subject. In contrast to the phrase Soft Core, a compulsory core course is called a **Hard Core Course**.

3.3 Elective Course

Generally a course which can be chosen from a pool of courses and which may be very specific or specialized or advanced or supportive to the discipline / subject of study or which provides an extended scope or which enables an exposure to some other discipline / subject/domain or nurtures the **student's** proficiency/ skill is called an Elective Course. Elective courses may be offered by the main discipline / subject of study or by sister / related discipline / subject of study. A Soft Core course may also be considered as an elective.

An elective course chosen generally from an unrelated discipline / subject, with an intention to seek exposure is called an **open elective**.

An elective course designed to acquire a special/advanced knowledge, such as Supplement study/support study to a project work, and a **student** studies such a course on his own with an advisory support by a teacher is called a **Self Study Elective**.

A core course offered in a discipline / subject may be treated as an elective by other discipline / subject and vice versa.

- 3.4 **Dissertation** is a soft core of 9 credits involving **research on a specific topic and scientific report writing**

4.0 Eligibility for admission.

- 4.1 Students with a B.ASLP / B.Sc. (Speech & Hearing) degree fulfilling all the following criteria are eligible for admission:

- 4.1.1 Degree from the University of Mysore or any other University/ Institute considered as equivalent.

- 4.1.2 The B.ASLP / B.Sc. (Speech & Hearing) degree program should have been **approved by Rehabilitation Council of India (RCI) excluding Institutes of National Importance and Foreign Programs**.

- 4.1.3 An average of not less than 55% of marks or **Equivalent CGPA** in the qualifying examination.

[**Note:** 'Average' refers to the average of the aggregate marks/**CGPA** of all the years/semesters of B.ASLP/ B.Sc. (Speech & Hearing)/equivalent programme].

4.2 Admission shall be made only on the basis of the marks obtained in the entrance examination conducted by the training institutes for this purpose as per their stipulated rules and regulations.

4.3 Entrance Examination

4.3.1 The objective of entrance examination is to assess the knowledge and skill of the students in the subjects of B.Sc. (Speech & Hearing)/B.ASLP or equivalent.

4.3.2 The entrance examination shall be conducted as notified from time-to-time as per the rules and regulations of the training institute.

4.3.3 The selection committee shall consist of the Head of the Institution, as Chairperson, one faculty member of the institution nominated by Head of the Institution, and one member nominated by the Vice-Chancellor of University of Mysore.

5.0 Scheme of Instruction

5.1 Details of the structure of the programme including the number of hours for the L:T:P components is provided in **Annexure I**.

5.2 The syllabus of every course is divided into four units.

5.3 Students shall attend camps/extension programs tour conducted by the institution.

5.4 A Master's Degree program is of 4 semesters duration. A **student** can avail a maximum of 8 semesters – 4 years (in one stretch) to complete the Master's Degree (including blank semesters, if any). Whenever a **student** opts for blank semesters, he /she has to study the prevailing courses offered by the department when he / she continues his / her studies.

5.5 A **student** has to earn a minimum of 80 credits for successful completion of the master's degree. The credits shall be earned by the **student** by studying **Hard Core, Soft Core, Electives, and Clinical Practicum**, as specified in the program. The students shall obtain additional 4 credits through SWAYAM course as per their choice of course available in the SWAYAM list under Open Elective. The degree shall be awarded on **successful completion of the program**.

5.6 Only such **students** who register for a minimum of credits per semester as detailed in the Course Structure-2025 and complete successfully with 80 credits in 4 successive semesters shall be considered for declaration of ranks, medals and are eligible to apply for student fellowship, scholarship, free ships and hostel facilities.

6.0 Attendance

6.1 Each course shall be taken, as a unit for purpose of calculating attendance and a **student** shall be considered to have put in the required attendance for the course, if he/she has

attended not less than 80% in case of theory classes and 90% in case of clinical practicum.

6.2 A **student**, who fails to satisfy the requirement of attendance in a course, shall reregister for the same in case of HC, register for the same or alternative course in case of SC/OE when it is offered next. Such students can take the exam for that particular course in the next odd or even semester as the case may be, after fulfilling the required attendance. However, the completion of the degree should not exceed double the duration of the programme. The re-registration facility shall be available only **once** in the entire programme.

6.3 If a student represents his/her Institution in Sports/NSS/Cultural or any official activities, he/she is permitted to avail to a maximum of 15 days in a semester, based on the recommendation and prior permission of the Head of the Institution.

7.0 Medium of Instruction

The Medium of instruction shall be English.

8.0 Continuous assessments, earning of credits and award of grades

The evaluation of the students shall be based on continuous assessment. The structure for evaluation is as follows:

8.1 Assessment and evaluation processes happen in a continuous mode. However, for reporting purposes, a semester is divided into 3 discrete components identified as C₁, C₂, and C₃.

8.2 The performance of a student in a course shall be assessed for a maximum of 100 or 60 marks as explained below.

8.2.1 The first component (C₁), of assessment is for 25% of the total marks. This shall be based on test/ assignment/ seminar etc. C₁ shall be assessed after completion of **first 8 weeks** of the semester with completion of the 50% of syllabus.

8.2.2 The second component (C₂), of assessment is for 25% marks. This shall be based on test/ assignment/ seminar etc. C₂ shall be assessed at the completion of the semester and syllabus.

8.2.2.1 The outline for continuous assessment activities for Component-I (C₁) and Component-II (C₂) will be proposed by the teacher (s) concerned before the commencement of the semester and will be discussed and decided in the respective Departmental Council. The **students** should be informed about the modalities well in advance. The evaluated courses/assignments during component I (C₁) and component II (C₂) of assessment are immediately returned to the **students** after obtaining acknowledgement in the register maintained by the concerned teacher for this purpose.

8.2.3 During the 18th -20th week of the semester, a semester-end examination of 2 hours or 1 hour 30 min duration (as relevant) shall be conducted for each course. This forms the third/final component of assessment (C₃) and the maximum marks for the final component shall be 50 or 30 (as relevant). **Note:** Model question paper pattern is as given in **Annexure - II**

8.3 Clinical Practicum

8.3.1 The clinical practicum examinations shall be in the main subjects of study, i.e., in Audiology.

8.3.2 Clinical practicum is part of all the semesters. The internal assessment shall be conducted continuously, **throughout** the semesters. In the C₁ and C₂, student shall be assessed for Clinical skill/repertoire, **planning for assessment and management**, preparation and maintenance of clinical documents (test protocols, diary, lesson plans and progress report), efficient use of time/skills in clinical work and Professional attitude/motivation/apptitude for clinical work. C₃ shall be based on clinical viva-voce. In the **Odd Semester**, viva-voce **shall be** conducted by two **internal examiners consisting of one clinical staff and one faculty**, who shall examine the **students'** clinical skills. In the **Even Semester**, viva-voce shall be conducted by one internal and one external faculty to examine the **students'** clinical skills.

8.4 Dissertation work

8.4.1 Dissertation shall be conducted by each candidate over a period of 2 semesters (III and IV semesters). Dissertation I of the semester III and Dissertation II of the semester IV shall be in the same course.

8.4.2 Right from the initial stage of defining the problem, the **student** has to submit progress reports periodically and also present **the progress and hold** regular discussions with the guide. Components of evaluation are as follows:

In the **III Semester**, C₁ **will be based on** Preparation of research proposal, and C₂ will be **based on Presentation of** research proposal. Both C₁ and C₂ shall be evaluated by **the guide**. C₃ **will be based on viva voce** and awarded by a panel of two members consisting of the guide and an internal examiner. The evaluation shall carry a weightage of 50% by the guide and 50% by the internal examiner.

In the IV Semester, C₁ will be based on periodic progress and progress report. C₂ will be based on results of the study and draft report. Both C₁ and C₂ will be awarded by the guide. C₃ will be based on viva-voce and evaluation of the report. This will be awarded by a panel of two members consisting of the guide and an external examiner. Report evaluation shall be by the guide and shall carry 50% of marks, and viva-voce examination shall be of 50% weightage and shall be awarded equally by the guide and the external examiner. **The maximum marks for** Dissertation I **and** Dissertation II are detailed in the Course Structure-2025.

8.4.3 The **students** shall submit three copies of dissertation before the commencement of theory examination of that semester. **Students** who fail to submit their dissertations on or before the stipulated date shall not be permitted to appear for the final **dissertation viva voce**.

8.4.4 A student who is said to have DROPPED dissertation work has to re-register for the same subsequently within the stipulated period.

8.5 In case a **student** secures less than **40%** in C₁ and C₂ put together in a course, the **student** is said to have DROPPED that course, and such a **student** is not allowed to appear for C₃ in that course.

In case a **student**'s attendance in a course is less than the stipulated percentage, the **student** is said to have DROPPED that course, and such a **student** is not allowed to appear for C₃ in that course.

Teachers offering the courses will place the above details in the Department Council meeting during the last week of the semester, before the commencement of C₃, and subsequently a notification pertaining to the above will be brought out by the Chairman of the Department before the commencement of C₃ examination. A copy of this notification shall also be sent to the office of the Registrar & Registrar (Evaluation).

In case a **student** secures less than **40% in C₃**, he/she may choose DROP/MAKEUP option.

In case a **student** secures more than or equal to **40%** in C₃, but his/her grade (**G**) = 5, as per section **8.9** below, then he/she may be declared to have been conditionally successful in this course, provided that such a benefit of conditional clearance based on G = 5 shall not be availed for a maximum of 8 credits for the entire programme of Master's Degree.

In case a **student** secures more than **40%** in C₃ but G=5, then he/she may choose DROP/MAKE-UP option. The **student** has to exercise his/her option immediately within 10 days from the date of notification of results. **A MAKEUP examination for odd semester courses will be conducted along with next regular odd semester examinations and for even semester courses along with the next regular even semester examinations. If a student is still unsuccessful, he/she may opt to DROP or again take up a MAKE-UP examination. However, not exceeding double the duration norm in one stretch from the date of joining the course.**

A **student** has to re-register for the DROPPED course when the course is offered again by the department, if it is a hard core course. The **student** may choose the same or an alternate core/elective in case the dropped course is soft core / elective course. A **student** who is said to have DROPPED **the course** has to re-register for the same subsequently within the stipulated period. The details of any dropped course will not appear in the grade card.

However, if a candidate secures less than 50% in C₃ of the clinical courses, no make-up examination would be given and candidate shall be considered to have dropped the course and re-register for the course.

8.6 Setting questions papers and evaluation of answer scripts.

8.6.1 I. Questions papers in three sets shall be set by internal / external examiners for a course.

II. The Board of Examiners shall scrutinize and approve the question papers and scheme of valuation.

III. There shall be single valuation for all theory papers by internal examiners. In case, the number of internal examiners falls short, external examiners may be invited. The marks awarded by the internal examiners shall be taken as the final marks for that particular course. The examination for **clinical** work/**dissertation** work will be conducted jointly by two internal examiners. However, the BoE on its discretion can also invite external examiners, if required.

IV. Challenge valuation: A student who desires to apply for challenge valuation shall obtain a photocopy of the answer script by paying the prescribed fee within 10 days after the announcement of the results. He / She can challenge the grade awarded to him/her by surrendering the grade card and by submitting an application along with the prescribed fee to the Registrar (Evaluation) within 15 days after the announcement of the results. This challenge valuation is only for C₃ component.

The answer scripts for which challenge valuation is sought for shall be sent to another examiner. The marks awarded will be the higher of the marks obtained in the challenge valuation and in maiden valuation.

8.6.2 If a course has both theory and practical components with credit pattern L : T : P, then as parts of (C₁ and C₂) both theory and practical examinations shall be conducted for 50 marks each. The final (C₃) component marks shall be decided based on the marks secured by the student in the theory examinations. If **X** is the marks scored by the student out of 50 in C₃ in theory examination, if **Y** is the marks scored by the student out of 50 in C₃ in Practical examination, and if **Z** is the marks scored by the student out of 50 in C₃ for a course of (L=0):T:(P=0) type that is entirely tutorial based course, then the final marks M in C₃ is decided as per the following table.

L.T.P distribution	Find mark M in C3
L:T:P	$\frac{[(L+T)*X]+[(T+P)*Y]}{L+2T+P}$
L:(T=0):P	$\frac{(L*X)+(P*Y)}{L+P}$
L:T:(P=0)	X
L:(T=0):(P=0)	X
(L=0):T:P	Y
(L=0):(T=0):P	Y
(L=0):T:(P=0)	Z

8.6.3 The details of continuous assessment are summarized in the following Table.

Component	Syllabus in a course	Weightage	Period of Continuous assessment
C ₁	First 50% (2 units of total units)	25%	First half of the semester. To be consolidated by 8 th week
C ₂	Remaining 50% (Remaining units of the course)	25%	Second half of the semester. To be consolidated by 16 th week
C ₃	Semester-end examination (All 50% units of the course)		To be completed during 18 th -20 th Week.

Final grades to be announced latest by 24th week

8.6.4 A student's performance from all 3 components will be in terms of scores, and the sum of all three scores will be for a maximum of 100 marks (25 + 25 + 50)/ 60 marks (15 + 15 + 30).

8.6.5 **Finally, awarding the grades should be completed latest by 24th week of the semester.**

8.7 The tentative / provisional grade card will be issued by the Registrar (Evaluation) at the end of every semester indicating the courses completed successfully. This statement will not contain the list of PENDING or DROPPED courses.

8.8 Upon successful completion of Masters degree, a final grade card consisting of grades of all courses successfully completed by the student will be issued by the Registrar (Evaluation).

8.9 The grade and the grade point earned by the candidate in the course will be as given below.

P	G	GP = V x G
40-49	5	V*5
50-59	6	V*6
60-64	6.5	V*6.5
65-69	7	V*7
70-74	7.5	V*7.5
75-79	8	V*8
80-84	8.5	V*8.5
85-89	9	V*9
90-94	9.5	V*9.5
95-100	10	V*10

Here, P is the percentage of marks ($P = [(C_1 + C_2) + M]$) secured by a student in a course which is rounded to nearest integer. V is the credit value of course. G is the grade and GP is the grade point.

8.10 A student also has an option to withdraw a course even after final examination, if he / she feels that he / she should improve in the course in terms of grade. The withdrawal of a course can be either only for C₃ components, in which the student has to reappear for only C₃ component to improve, carrying the marks of C₁ and C₂ components (this option is called PENDING option), or for the entire course where the student has to reenrol for the course afresh or can chose an

alternative course if the withdrawal course is a soft/elective core (this option is called DROPPED option). This act of withdrawing should be immediately within seven days after the announcement of final results.

- 8.11 Overall cumulative grade point average (CGPA) of a student after successful completion the required number of credits (76) is given by

$$\text{CGPA} = \Sigma \text{GP} / \text{Total number of credits (calculated up to 4 decimal places)}$$

9. Classification of results:

The final grade point (FGP) to be awarded to the student is based on CGPA secured by the student and is given as follows.

CGPA	FGP	
	Numerical Index	Qualitative Index
4 <= CGPA < 5	5	SECOND CLASS
5 <= CGPA < 6	6	
6 <= CGPA < 7	7	FIRST CLASS
7 <= CGPA < 8	8	
8 <= CGPA < 9	9	DISTINCTION
9 <= CGPA < =10	10	

$$\text{Overall percentage} = 10 * \text{CGPA}$$

10.0 Provisions for Repeaters

- 10.1 A **student** is allowed to carry all the previous unleared **courses except clinical practicum** to the subsequent semester/semesters subject to Regulation 8.5

11 Provision for appeal

- 11.1 If a student, is not satisfied with the evaluation of C1 and C2 components, he / she can approach the grievance cell with the written submission together with all facts, the assignments, test papers etc, which were evaluated. He/she can do so before the commencement of semester-end examination. The grievance cell is empowered to revise the marks if the case is genuine and is also empowered to levy penalty as prescribed by the university on the student if his/her submission is found to be baseless and unduly motivated. This cell may recommend taking disciplinary/corrective action on an evaluator if he/she is found guilty. The decision taken by the grievance cell is final.
- 11.2 For every program there will be one grievance cell. The composition of the grievance cell is as follows.
- 1.The Registrar (Evaluation) ex-officio Chairman / Convener
 - 2.One senior faculty member (other than those concerned with the evaluation of the course concerned) drawn from the department/discipline and/or from the sister departments/sister disciplines.
 - 3.One senior faculty members / subject experts drawn from outside the University department.

12.0 Barring of simultaneous study

- 12.1** No student admitted to the degree programme in a College/Institution under the jurisdiction of this University shall be permitted to study simultaneously in any other programme leading to a degree (regular, evening & morning) offered by this or any other University.
- 12.2** If a student gets admitted to more than one programme, the University shall cancel without giving prior notice, his/her admission to all the programmes to which he/she has joined.

13.0 Miscellaneous

- 13.1** These revised regulations will apply to students admitted for the academic year 2025-26 and onwards.
- 13.2** Any other issue, not envisaged above, shall be resolved by the Vice Chancellor in consultation with the appropriate bodies of the university, which shall be final and binding.

REGISTRAR

VICE-CHANCELLOR

M.Sc. (Speech Language Pathology) CBCS and CAGP Course Structure– 2025

Sl. No.	Course No.	Credit L:T:P	Credits	Total Credits	No. of Hrs (Hr x Cr = Hr)	No. of hrs/wk	Total hrs/wk	HC/ SC /OE	Title of the Course	C1	C2	C3	Total
I	1.1	2:2:0	4	21	L=1x2=2 T=1x2=2	4	17 + 16	HC	Language Disorders in Children – Advanced	25	25	50	100
	1.2	2:1:0	3		L=1x2=2 T=1x1=1	3		HC	Speech Science and Production	25	25	50	100
	1.3	2:1:0	3		L=1x2=2 T=1x1=1	3		HC	Research Methods, Epidemiology & Statistics	25	25	50	100
	1.4	2:1:0	3		L=1x2=2 T=1x1=1	3		HC	Clinical Linguistics	25	25	50	100
	1.5	1:1:0	2		L=1x1=1 T=1x1=1	2		HC	Neurobiology of Speech-language & Cognition	15	15	30	60
	1.6a 1.6b	1:1:0	2		L=1x1=1 T=1x1=1	2		SC	Minor Optional- a. Entrepreneurship b. Speech, Language and Perception	15	15	30	60
	1.7	0:0:4	4		P=4x4=16	16		HC	Clinicals in Speech Language Pathology	25	25	50	100
				21			33			155	155	310	620
II	2.1	2:2:0	4	20	L=1x2=2 T=1x2=2	4	16 + 16	HC	Voice Science and Disorders	25	25	50	100
	2.2	2:2:0	4		L=1x2=2 T=1x2=2	4		HC	Dysphagia	25	25	50	100
	2.3	2:1:0	3		L=1x2=2 T=1x1=1	3		HC	Advances in structural anomalies and Speech sound disorders	25	25	50	100

2.4	2:1:0	3	20	L=1x2=2 T=1x1=1	3	32	HC	Language and Literacy Disorders	25	25	50	100
2.5a 2.5b	1:1:0	2		L=1x1=1 T=1x1=1	2		SC	Minor Optional- a. Entrepreneurship b. Speech, Language and Perception	15	15	30	60
2.6	0:0:4	4		P=4x4=16	16		HC	Clinicals in Speech Language Pathology	25	25	50	100
									140	140	280	560

Sl. No.	Course No.	Credit L:T:P	Credits*	Total Credits	No. of Hrs (Hr x Cr = Hr)	No. of Hrs/wk	Total hrs/Wk	HC/ SC /OE	Title of the Course	C1	C2	C3	Total
III	3.1	2:2:0	4	19	L=1x2=2 T=1x2=2	4	13+5+16	HC	Disorders of Fluency and Prosody	25	25	50	100
	3.2	2:2:0	4		L=1x2=2 T=1x2=2	4		HC	Advances in Motor Speech Disorders	25	25	50	100
	3.3	2:1:0	3		L=1x2=2 T=1x1=1	3		HC	Aphasia	25	25	50	100
	3.4	1:1:0	2		L=1x1=1 T=1x1=1	2		HC	Genetics of Speech-language	15	15	30	60
	3.5a 3.5b 3.5c 3.5d	0:1:1	2		T=1x1=1 P=4x1=4	5		SC	Dissertation in a. Speech Sciences b. Speech Pathology c. Language Sciences d. Language Pathology	15	15	30	60
	3.6	0:0:4	4		P=4x4=16	16		HC	Clinicals in Speech Language Pathology	25	25	50	100
				19			34			130	130	260	520

IV	4.1	2:1:0	3	16	L=1x2=2 T=1x1=1	3	5 + 16+16	HC	Augmentative & Alternative Communication	25	25	50	100
	4.2	1:1:0	2		L=1x1=1 T=1x1=1	2		HC	Cognitive Communication Disorders	15	15	30	60
	4.3a 4.3b 4.3c 4.3d	0:4:3	7		T=1x4=4 P= 4X3=12	16		SC	Dissertation in a. Speech Sciences b. Speech Pathology c. Language Science d. Language Pathology	25	25	50	100
	4.4	0:0:4	4		P=4x4=16	16		HC	Clinicals in Speech Language Pathology	25	25	50	100
				16			37			90	90	180	360
				76			136			515	515	1030	2060

*Swayam course (Credit: 4) will be offered as per UOM regulations (Open Elective) in the 3rd Semester.

Please note:-

L: Lecture (1 hour =1 credit)

T: Tutorial (1 hours= 1 credit)

P: Clinical Practicum (4 hours= 1 credit)

ANNEXURE II-A

**MASTER OF SCIENCE (Audiology/Speech-Language Pathology)
CBCS SCHEME (MODEL QUESTION PAPER PATTERN)
(All Units are Compulsory)**

Paper Title:
Paper Code:

Marks: 30
Time: 1 ½ Hours

Unit No.	Question Number	Question/s	Marks
I	1	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	10
	2	OR XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	10
II	3	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	10
	4	OR XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	10
III	5	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	05
	6	OR XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	05
IV	7	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	05
	8	OR XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	05

ANNEXURE II-B

MASTER OF SCIENCE (Audiology/Speech-Language Pathology)
CBCS SCHEME (MODEL QUESTION PAPER PATTERN)
(All Units are Compulsory)

Paper Title:
Paper Code:

Marks: 50
Time: 2 Hours

Unit No.	Question Number	Question/s	Marks
I	1)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	10
		OR	
	2(a) 2(b)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	05 05
II	3(a) 3(b)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	10 05
		OR	
	4)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	15
III	5(a)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	05
	5(b)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	05
	5(c)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	05
		OR	
	6(a) 6(b)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	10 05
IV	7(a)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	05 03 02
	7(b)		
		OR	
	7(c)	XXXXXXXXXXXXXXXXXXXXXXXXXXXXX	10

M.Sc. SLP Syllabus

<u>Course: 1.1 (HC)</u> <u>Language Disorders in Children – Advanced</u>		
Objectives	After completing this course, the student will be able to a) Explain theories and models of language acquisition in monolingual/ bi/ multilingual children. b) Understand the application of theories and models of language acquisition to assessment and management of language deficits and disorders in children, c) Describe the basis of developmental and acquired language disorders in children d) Conduct language assessment and contribute to diagnosis of children with disorders influencing/affecting language e) plan and implement management strategies for development of communication of children with disorders influencing/affecting f) Apply principles of evidence based-practice in both assessment and management of language deficits or disorders in children. g) Understand the role of other team members in assessment and management of language deficits/ disorders in children. h) Liaise with other members of team for assessment and management of children with language deficits/ disorders. i) Advocate for children with disorders influencing/ affecting language.	
Unit 1	Theories and Models of Language Acquisition a) Critically evaluate theories of language acquisition- Biological maturation, linguistic, cognitive, information processing and social theory. b) Describe the models in child language disorders - Dual-Route Cascaded Models, Connectionist Models, Hierarchical Models. c) Understand the Application of theories of language acquisition and models to assessment and management of children with disorders influencing/affecting language. d) Psycholinguistic and neurolinguistic processing of language disorders in children.	
Unit 2	Conditions and Disorders Influencing Language Development in Children	

	a) Causes, features, characteristics (speech, language, communication, cognitive behavioral, and literacy), specific assessments and management of • congenital conditions like genetic and chromosomal abnormalities, • prenatal issues like malnourishment, trauma, severe anxiety, exposure to alcohol and other drugs among others • natal issues like pre-maturity, low birth weight, delayed birth cry and others • twins/ multiple birth, • Intellectual disabilities, • sensory impairments - vision and hearing • specific language impairment/ developmental language disorder, • emotional disturbances in children including severe anxiety disorder • family deprivation- children in orphanages, early vs. late adopted children • special populations like children from very low-income families, nomadic tribes, war zones etc. b) Autism Spectrum Disorders: • Etiology, • defining characteristics, • symbolic abilities and • social aspects of communication, • application of theory of mind to understanding the characteristics of ASD, • Diagnosis of autism spectrum disorders – tools; • Team approach to diagnosis and management of ASD. • Applied behavioral analysis, • Hanen approach, • Factors to be considered for management decision and its implementation- Analytical Vs Global language processing, sensory processing, • presence of comorbidities like verbal apraxia etc. c) Attention Deficit Hyperactivity Disorders • Causes, • development of language and literacy in children with ADHD, • characteristics and issues of adolescents with ADHD, • tools / tests used for assessment and diagnosis of ADHD in India and globally.	
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	• Importance of multidisciplinary team in the diagnosis and management of ADHD, and its members. d) Acquired language disorders: causes (stroke, trauma, epilepsy etc.), • incidence and prevalence of acquired language disorders across different etiologies globally and in India; • immediate and long-term effects on speech, language, cognition, behavior, emotions, and literacy; • Test/ Tools for assessment, • management approaches and techniques, • factors affecting prognosis.	
Unit 3	Assessment and Management of Language Disorders in Children a) Concept of neurodiversity and neurodiversity affirming practices in assessment and management of children with language deficits/ disorders. b) DSM 5, DSM 5 -TR, ICD 10, ICD 11 & ASHA 2025: classification, nomenclature, and characteristics of disorders influencing/ affecting language in children. c) Controversies and challenges in implementation of DSM 5, DSM 5 -TR, ICD 10, ICD 11 & ASHA 2025 for diagnosis of children with deficits/ disorders of language. d) Critical appraisal of tests and tools for assessment of language and communication in children and adolescents- Western & Indian: e) Relevance of neuroimaging methods and cortical potentials in the assessment of language disorders in children f) General principles, approaches and techniques to management of language deficits and disorders. g) Evidence-based practice and response-to-intervention in child language disorders h) Team approach to assessment and management of children with language deficits/ disorders with special emphasis on diagnostic considerations by developmental & behavioral pediatricians and psychologists for disorders influencing/ affecting language, and management considerations for sensory processing and motor deficits by occupational therapists/ physiotherapists. i) Parents as equal partners in management of children with language deficits/ disorders: guidance and counseling by SLP, Parent empowerment/ Parent implemented intervention for language delay/disorders. j) Applications of AAC in language disorders	

	k) Applications of technology and tele-rehabilitation in language intervention l) Advocacy for children with deficits/ disorders of language: awareness, concessions, facilities, rights and certifications (as per RPwD, 2016) of children with disorders affecting language with emphasis on social aspects and education.	
Unit 4	Bi/Multilingualism in Children a) Types of Bi/multilingualism b) Processing of language in bi/multilingual children c) Factors influencing second language acquisition d) Variables in second language acquisition: cognitive-linguistic and affective e) Assessment and diagnostic considerations in bi/multilingual children with deficits/ disorders of language. f) Management considerations in bi/multilingual children with deficits/ disorders of language. g) Challenges in India- development of equivalent tests/ tools for assessment of language across language, diagnosis in bi/multilingual children, management decisions for bi/multilingual children including language for therapy and education of bi/multilingual children with deficits/ disorders of language and others.	
Practicum	1. Record Language Samples of Two Typically Developing Children and Two Children with Language Disorders and Transcribe them using International Phonetic Alphabet (IPA). 2. Evaluate at least Two Children with Language Disorders using Kannada Language Test (KLT)/ Malayalam Language Test (MLT), Linguistic Profile Test (LPT), English Language Test for Indian Children (ELTIC). 3. Evaluate any Two Children with the following Language Disorders using Appropriate Tests/Protocols: • Autism Spectrum Disorders: ○ Autistic Behaviour Composite Checklist Profile (ABCCP); ○ Indian Scale for Assessment of Autism (ISAA)	

	○ Childhood Autism Rating Scale (CARS) • Specific Learning Disability: ○ Early Reading Skills (ERS); Reading Acquisition Profile in Kannada (RAP-K); ○ Early Literacy Screening Tool (ELST); ○ Cognitive-Linguistic Assessment Protocol (CLAP); ○ Cognitive-Linguistic Quick Test (CLQT) • Attention Deficit Hyperactivity Disorder (ADHD): ○ DSM V Checklist for ADHD • Specific Language Impairment (SLI)/Developmental Language Disorder: ○ LPT ○ KLT/MLT • Intellectual Disability: ○ Receptive Expressive Emergent Language Scale (REELS); ○ Three-Dimensional Language Acquisition Test (3DLAT), ○ LPT, ○ KLT	
References	<u>Unit 1</u> • Gleason, J. B. (2005). The Development of Language. 6th Ed. Boston, Pearson Education Inc. • Hult, L. M., & Howard, M. R. (2006). Born to Talk: An Introduction to Speech and Language Development. 4th Ed, Boston, Pearson Education, Inc. • Levey, S. (2014). Introduction to Language Development. San Diego: Plural Publishing Inc.	

- Nelson, N. W. (1998). Childhood Language Disorders in Context: Infancy Through Adolescence. 2nd Ed. USA: Allyn & Bacon Inc.
- Owens, R. E. (2008). Language Development: An Introduction. 5th Ed, Boston: Pearson Education, Inc.
- Shyamala. K. C. (2011). Language Disorders in Children. Clinical Linguistic Series-1. Mysore, CIIL Publications.

Unit 2

- American Psychiatric Association. (2015). Neurodevelopmental disorders: DSM-5® selections. American Psychiatric Pub.
- Angell, C. A. (2010). Language Development and Disorders- A Case Study Approach. LLC, Jones & Bartlett Publishers.
- Burack, J. A., Hodapp, R. M., & Zigler, E. (1998). Handbook of Mental Retardation and Development. London: Cambridge University Press.
- George J. D., & Lee, K. (2011). Young Children with ADHD: Early Identification and Intervention. Washington DC, American Psychological Association.
- Goldstein, S., & Ozonoff, S. (Eds.). (2018). Assessment of autism spectrum disorder. Guilford Publications.
- Gregg, N. (2009). Adolescence & Adults with Learning Disabilities and ADHD - Assessment and Accommodation. New York, Guilford Publications, Inc.
- Hegde, M. N. (1996). A Course Book on Language Disorders in Children. San Diego, Singular Publishing Group.
- Janet, D. (1996). Dyslexia. London, Whurr Publishers Ltd.
- Jeanette, R. (2007). Learning Disability. 2nd Ed. New York, John Wiley and Sons.
- Jena, S. P. K. (2013). Learning Disability: Theory to Practice. New York, Sage Publications.
- Kaderavek, J. N. (2015). Language Disorders in Children: Fundamental Concepts of Assessment and Intervention. 2nd Ed. USA, Pearson Education Inc.
- Karanth, P. & Joe, R. (2003). Learning Disabilities in India. New Delhi, Sage Publications.

- Lees, J. & Urwin, S. (1995). Children with Language Disorders. Delhi, A.I.T.B.S., Publishers and Distributors.
- Lees, J. A. (2005). Children with Acquired Aphasias. London, Whurr Publishers Ltd.
- Leonard, L. B. (1998). Children with Specific Language Impairment. Massachusetts, MIT Press.
- Lynn, A. (2008). Autism and Asperger Syndrome. San Diego, Plural Publishing.
- Norbury, P. R. & Courtenay F. (2012). Language Disorders from Infancy through Adolescence: Listening, Speaking, Reading, Writing, and Communicating. Missouri, Elsevier Mosby.
- Owens, J. R., Metz, D.E., & Farinella, K.A. (2011). Introduction to Communication Disorders - A Lifespan Evidence Based Perspective. Upper Saddle River; NJ, Pearson Education Inc.
- Paul, R. (2007). Language Disorders from a Developmental Perspective: Essays in Honor of Robin S. Chapman. New York, Lawrence Erlbaum Associates.
- Peeters, T. (1997). Autism - From Theoretical Understanding to Educational Intervention. San Diego, Singular Publishing Group Inc.
- Rondal, S., & Edwards, L. (1997). Language in Mental Retardation. London, Singular Pub Inc.
- Shyamala, K. C. (2012). Language Disorders in Children. Mysore, India, Central Institute of Indian Languages.
- Vallikkat, S. (2011). Handbook of Learning Disability. New Delhi: Kanishka Publishers and Distributors.
- Vinson, B. P. (2012). Language Disorders across the Lifespan. 3rd Ed. USA: Delmar Cengage Learning.

Unit 3

- Bloom, L., & Lahety, M. (1978). Language Development and Language Disorders. New York: John Wiley & Sons Inc.
- Damico, J. S., Muller, N., & Ball, M. J. (2010). The Handbook of Language and Speech Disorders. UK, Blackwell Publishing Limited.
- George J. D., & Lee, K. (2011). Young Children with ADHD: Early Identification and Intervention. Washington DC, American Psychological Association.

	• Haynes, W. O., & Pindzola, R. H. (2004). Diagnosis and Evaluation in Speech Pathology. 6th Ed. USA, Library of Congress Cataloging. • Hegde, M. N. (1985). Treatment Procedures in Communicative Disorders. London, Taylor & Francis Ltd. • Hegde, M. N. (1985). Treatment Procedures in Communicative Disorders. San Diego, College Hill Press Inc. • Hegde, M. N. (1996). Pocket Guide to Treatment in Speech Language Pathology. San Diego, Singular Publishing Group. • Hegde, M. N. (2001). Pocket Guide to Treatment in Speech Language Pathology. San Diego, Singular Publishing Group. • Hegde, M. N. (2008). Pocket Guide to Treatment in Speech Language Pathology. New York, Thomson Delmar Learning. • Hegde, M. N., & Christine, M. A. (2006). Language Disorders in Children: An Evidence Based Approach to Assessment and Treatment. Boston, Pearson Education Inc. • Hegde, M. N., & Davis, D. (2005). Clinical Methods and Practicum in Speech-Language Pathology. 4th Ed. New York: Thomson Delmar Learning. • Hegde, M. N., & Davis, D. (2005). Clinical Methods and Practicum in Speech-Language Pathology. 4th Ed. New York, Thomson Delmar Learning. • Johns, D. F. (1978). Clinical Management of Neurogenic Communicative Disorders. Boston, Little Brown & Co. • Kaderavek, J. N. (2015). Language Disorders in Children: Fundamental Concepts of Assessment and Intervention. 2nd Ed. USA, Pearson Education Inc. • Law, J (1992). The Early Identification of Language Impairment in Children: Therapy in Clinical Practice. N.Y, Chapman & Hall. • Lee, W. A. (2010). A Best Practice Guide to Assessment and Intervention for Autism and Asperger Syndrome in Schools. London, Jessica Kingsley Publishers. • Lovaas, O (1977). The Autistic Child: Language Development through Behavior Modification Approaches. San Diego, Singular Pub Co.	
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	• Nelson, N. W. (1998). Childhood Language Disorders in Context: Infancy through Adolescence. 2nd Ed. USA, Allyn & Bacon. • Rass, P. & Swain, G. (1992). Cognitive and Linguistic Improvement Program. San Diego, Singular Pub Co. • Rhea, P., & Cascella, P. W. (2007). Introduction to Clinical Methods in Communication Disorders. 2nd Ed. Baltimore; Maryland, Paul H. Brookes. • Shyamala, K. C. (2012). Language Disorders in Children. Mysore; India, Central Institute Of Indian Languages. • Waterhouse, S. (2001). A Positive Approach to Autism. London: Jessica Kingsley. <u>Unit 4</u> • Bhatia, T. K. & Ritchie, W. C. (2014). Handbook of Bilingualism and Multilingualism. 2nd Ed. East Sussex, Wiley Blackwell. • Bialystok, E. (2001). Bilingualism in Development: Language, Literacy and Cognition. New Delhi, Cambridge University Press. • Dehouwer, A. (2000). An Introduction to Bilingual Development. Bristol, Multilingual Matters. • Grosjean, F. (1982). Life with Two Languages: An Introduction to Bilingualism. Cambridge: M A., Harvard University Press.	
<u>Course: 1.2 (HC)</u> <u>Speech Science and Production</u>		
Objectives	After completing the course, the students will be able to: - Describe the physiology of speech production - explain the theoretical constructs of speech production and analysis of speech, - choose instrumentation to measure acoustic, aerodynamic and other aspects of speech production, - Critically evaluate research articles related to speech production.	
Unit 1	Physiology of Speech Production mechanism	12 Hours

	a) The Physiological Aspects of Speech Production (Respiration, Laryngeal, Resonance and Articulatory Subsystems) b) Overview of Fundamental Aspects of Speech Acoustics: Acoustic wave, Analog-Digital conversion, Sampling, Quantization, Windowing and Filtering c) Theories of Speech production; critical evaluation of Acoustic theory of Speech production theory	
Unit 2	Speech Aerodynamics and Acoustics a) Aerodynamics of Speech • Speech Breathing • Mechanics of Airflow, Generation and maintenance of Airway Pressure for Speech. b) Lower and Upper Air Way Dynamics • Lung and Laryngeal Activities for different Speech sounds, whisper, conversational and loud Speech • Relationship between Velopharyngeal Orifice Resistance and Oral Port Size • Intraoral Pressure and Aerodynamics for different Speech sounds c) Instrumentation in Speech Production: Measures of Air Volume, Air Flow, Air Pressure	12 Hours
Unit 3	Acoustic Characteristics of Speech Sounds and Spectrography a) Spectrogram: Types of Spectrograms; Spectrograms of Vowels and Consonants; Identifying Place of Articulation, Manner of Articulation, Voicing and Aspiration b) Acoustic Characteristics of speech sounds • Vowels and Diphthongs; Vowel space, Isovowel Lines • Stops and Plosives • Nasals • Fricatives • Other Consonants (Affricates, Glides, and Laterals) c) Acoustic Effects of Context and Speaker: Phonetic Context, Sex and Age, Speech of Women and Children	15 Hours
Unit 4	Acoustic Analysis techniques and its application in Speech Sciences a) Brief History on the Acoustic Analysis of Speech: Oscilloscope, Fourier Analysis, Spectrograph, Digital Signal Processing techniques: Waveform, Spectrum Analysis	15 Hours

	b) Techniques and softwares: Pitch Extraction: Pitch/ F0 and Intensity Analysis; Formant Analysis: Formant extraction, Tracking; Fast Fourier Transformation (FFT) and Linear Prediction Correlation (LPC), Auto Correlation, Digital Spectrogram, Long Term Average Spectrum (LTAS), Inverse Filtering, and Cepstrum c) Applications of Acoustic Analysis • Speech Disorders: Hearing Impairment, Stuttering, Dysarthria, Apraxia, Cleft Lip and Palate • Infant Cry: Characteristics of Normal cry, acoustic features of Abnormal Cries, Infant Cry as a Tool for Early Identification of High-Risk Babies • Speech Synthesis: Articulatory Synthesis, Parametric Synthesis and Analysis by Synthesis • Speaker and Speech Recognition: Traditional, Semiautomatic and Automatic methods	
Practicum	<u>Know:</u> • Application of FFT, LPC, Cepstrum and Inverse Filtering <u>Do:</u> • Acoustic Analysis of Vowels, Diphthongs, Plosives, Nasals, Fricatives, Affricates and Other Speech Sounds using Spectrograms on PRAAT • Acoustic Analysis in Normal Individual and compare with one case each of following speech Disorders: Hearing Impairment, Stuttering, Dysarthria, Apraxia, Repaired Cleft Lip and Palate	
References	Unit 1 • Barlow, S. M. (1999). Hand Book of Clinical Speech Physiology. San Diego, Singular Publishing Group. • Borden, G. J., & Harris, K. S. (2003). Speech Science Primer. 4th Edition, Philadelphia. Lippincott, William & Wilkins. • Daniloff. R. S., Gordon & Lawrence, (1980). The Physiology of Speech & Hearing: An Introduction. New Jersey, Prentice-Hall Inc. • Hixon, T. J. Weismer, G. & Hoit, J. D. (2008). Preclinical Speech Sciences; Anatomy Physiology Acoustics Perception. San Diego, Plural Publishing. • Hixon, T. J., Weismer, G., & Hoit, J. D. (2014). Preclinical Speech Sciences; Anatomy Physiology Acoustics Perception. San Diego, Plural Publishing. • Mac Neilage, P F. (1983). The Production of Speech. NY, Springer – Verlag. • Raphael, L. J. (2007). Speech Science Primer. Philadelphia, Lippincott Williams & Wilkins.	

- Seikal, J. A., & King, D. W. (2005). Anatomy & Physiology for Speech, Language and Hearing. 4th Edition, NY, Thompson – Delmar Learning.

Unit 2

- Barry, W. J., & Van Dommelen, W. A. (2005). Integration of Phonetic Knowledge in Speech Technology. New York, Springer.
- Charles, E. (1999). Introduction to Sound: Acoustics for the Hearing & Speech Sciences. New York, Delmar Cengage Learning.
- Danilooff, R. G. (1985). Speech Sciences; Recent Advances. London, Taylor & Francis Ltd.
- Ferrand, C. T. (2007). Speech Science – An Integrated Approach to Theory and Practice. 2nd Edition, Boston, Allyn & Bacon.
- Ferrard, C. T. (2001). Speech Science – An Integrated Approach to Theory and Practice. 1st Edition, Boston, Allyn & Bacon.
- Fucci, D. J., & Lass, N. J. (1999). Fundamental of Speech Sciences. Boston, Allyn & Bacon.
- Fry, D. D. (1979). The Physics of Speech. New Delhi. Cambridge University Press.
- Hewlett, N., & Beck, J. M. (2006). An Introduction to the Science of Phonetics. New Jersey, Lawrence Erlbaum Associates Publishers.
- Kent, R. D., & Read, C. (2002). The Acoustic Analysis of Speech. New York, Delmar Learning.
- Ladefogd, P. (2001). An Introduction to the Sounds of Languages; Vowels and Consonants. Oxford, Black Well.
- McLeod, S., & Singh, S. (2009). Speech Sounds; A Pictorial Guide to Typical and Atypical Speech. San Diego, Plural Publishing.
- Pickett, J. M. (1999). The Acoustics of Speech Communication: Fundamentals, Speech Perception Theory & Technology. Boston, Allyn & Bacon.
- Raphael, L. J. (2007). Speech Science Primer. Philadelphia, Lippincott Williams & Wilkins.
- Saito, S. (1992). Speech Science & Technology. Ohmsha, Tokyo.
- Ryalls, J., & Behrns, S. (2000). Introduction to Speech Sciences - From Basic Theories to Clinical Applications. Boston, Allyn & Bacon.

Unit 3

- Baken, R. J., & Daniloff, R. G. (1991). Readings in Clinical Spectrography. San Diego, Singular Publishing Group.
- Ball, M. J., & Lowry, O. M. (2001). Methods in Clinical Phonetics. London, Whurr Publishers.
- Edwards, A. T. (2003). Applied Phonetics; The Sounds Of American English. New York, Thomson Delmar Learning.
- Edwards, A. T. (1992). Applied Phonetics; The Sounds of American English. New York; San Diego, Singular Publishing Group.
- Hewlett, N., & Beck, J. M. (2006). An Introduction to the Science of Phonetics. New Jersey, Lawrence Erlbaum Associates Publishers.
- Kent, R. D. (1997). Speech Sciences. London, San Diego, Singular Publishing Group.
- Kent, R. D., & Read, C. (2002). The Acoustic Analysis of Speech. New York, Delmar Learning.
- Ladefoged, P. (1996). Elements of Acoustic Phonetics. 2nd Edition, Chicago, University of Chicago.
- Ladefogd, P. (2001). An Introduction to the Sounds of Languages; Vowels and Consonants. Oxford, Black Well.
- Pickett, J. M. (1980). Sounds of Speech Communication. A Primer of Acoustic Phonetics and Speech Perception. Boston, Allyn & Bacon.
- Pickett, J. M. (1999). The Acoustics of Speech Communication: Fundamentals, Speech Perception Theory & Technology. Boston, Allyn & Bacon.
- Raphael, L. J. (2007). Speech Science Primer. Philadelphia, Lippincott Williams & Wilkins.
- Rosner, B. S. & Pickering, J. B. (1994). Vowel Perception & Production. London, Oxford University Press.
- Stevens, K. N. (2000). Acoustic Phonetics. Massachusetts, MIT Press.

Unit 4

- Baken, R. J., & Daniloff, R. G. (1991). Readings in Clinical Spectrography. San Diego, Singular Publishing Group.
- Barr, R. G. (2000). Crying as a Sign, A Symptom and a Signal: Clinical, Emotional and Developmental Aspects of Infant and Toddler Crying. Cambridge, Cambridge University.
- Boeffard, O., & D'Alessandro, C. (2009). Speech Synthesis. In Mariani, J. (Eds.) Spoken Language Processing (Pp. 99-154). Wiley Publishers, London, UK.

	• Borden, G. J., & Harris, K. S. (2003). Speech Science Primer. 4th Edition, Philadelphia, Lippincott, William & Wilkins. • Deng, L., & O'Shaughnessy, D. (2003). Speech Processing: A Dynamic and Optimization-Oriented Approach. New York, Marcel Dekker Inc. • Fant, G. (2004). Speech Acoustics and Phonetics. Dordrecht, Kluwer Academic Publishers. • Harrington, J., & Cassidy, S. (1999). Techniques in Speech Acoustics. Dordrecht, Kluwer Academic Publishers. • Hollien, H. (2002). Forensic Voice Identification. NY, Academic Press Inc. • Keller, E., Bailly, G., Monaghan, A., Terken, J., & Huckvale, M. (2002). Improvements in Speech Synthesis. West Sussex, England, John Wiley & Sons. • McLeod, S. & Singh, S. (2009). Speech Sounds; A Pictorial Guide to Typical and Atypical Speech. San Diego, Plural Publishing. • Murry, T. & Murry, J. (1980). Infant Communication: Cry and Early Speech. San Diego, College – Hill Press. • Singh, S. & Singh, K. (2006). Phonetics: Principles and Practices. 3rd Edition, San Diego, Plural Publishing. • Tatham, M., & Morton, K. (2005). Developments in Speech Synthesis. West Sussex, England, John Wiley & Sons. • Titze, I. R. (1994). Principles of Voice Production. New Jersey, Prentice – Hall Inc.	
<u>Course: 1.3 (HC)</u> <u>Research Methods, Epidemiology & Statistics</u>		
Objectives	After completing this course, the student will a) Have the skills to frame research questions and design experiments, b) Decide on the appropriate statistical methods to test hypotheses and interpret the results, b) Be aware of epidemiological issues and its relevance in speech-language research, c) Undertake evidence-based practice in audiology and Speech-Language Pathology d) Apply statistics in the field of Speech-Language Pathology and Audiology. e) Observe ethical practices in research	
Unit 1	Experimental Designs and Their Applicability in Speech-language and Hearing Research and Epidemiology	

	a) Types of research- Ex post facto research, normative research, standard group comparison, experimental research (Bivalent, Multivalent and Parametric), clinical and applied research, sample surveys, evaluation research b) Methods of observation and measurement, strategies and designs in research c) Experimental designs, single subject experimental designs and group designs d) Validity of research designs (Internal validity & External validity) e) Critical analysis of the research methods employed in speech language pathology and audiology. f) Documentation and research writing g) Ethical considerations in research – National and international guidelines (Organization, Formatting and Writing styles) h) Epidemiology: Definition, basic concepts – scope and function of epidemiology i) Describe criteria for characterizing the causality of associations j) Application of epidemiological concepts in evaluation and screening procedures employed in speech language pathology and audiology k) Application and impact of epidemiology on national and local policy; influence of epidemiology on ethical and professional issues	
Unit 2	Statistical Measures and Their Features a) Review of descriptive statistics (Numerical and graphical summaries) b) Concept of probability c) Estimation of Confidence Interval for mean d) Statistical Inference – Basic concepts related to hypothesis testing – null and alternative hypothesis, significance level and p value, critical value and acceptance/rejection region, power of the test, types of errors: Type I and Type II errors, one-sided (one-tailed) test and two-sided (two – tailed test) e) Compare and contrast Parametric and non-parametric approaches to hypothesis testing g) Applications of Nonparametric tests - Mann-Whitney U test, Kruskal-Wallis test, Wilcoxon's signed-rank test, Friedman's test (with numerical) h) Categorical data analysis - contingency tables, Chi-square test for independence of attributes (with numerical) i) Measures of association (Contingency coefficient, Cramer's V), Kappa coefficient (with numerical)	

	j) Measures in epidemiology and diagnostic accuracy – Relative risk, odds ratio, positive and negative likelihood ratios; positive predictive value, negative predictive value	
Unit 3	Regression, Univariate and Multivariate Analysis a) Correlation – Karl Pearson’s and Spearman’s coefficient, regression analysis and prediction (simple linear with numerical) b) Introduction to - multiple linear regression, logistic regression and path analysis b) Analysis of Variance (ANOVA)- Basic models, assumptions, one- way ANOVA (with numerical) ; Introduction to two-way ANOVA and post-hoc tests; c) Consequence of failure of assumptions underlying ANOVA; d) Concept of - Tests for additivity, homogeneity and transformation, e) Introduction to Analysis of Covariance (ANCOVA), Repeated measure ANOVA f) Introduction to effect size and interpretation c) Multivariate data analysis (concept only) • Need for multivariate data analysis • Introduction to various methods • Principal component analysis • Discriminant analysis • MANOVA d) Evaluation of application of statistics to different research designs	
Unit 4	Evidence Based Research a) Introduction to Evidence Based Practice (EBP) and Steps to EBP from formulating foreground question, finding best current evidence, critical appraisal of best current evidence, summarizing evidence, integrating evidence and tracking progress. b) Levels of evidence: For experimental and non-experimental designs; treatment efficacy- randomized control study, quasi experimental study, correlation and case study, single subject designs, expert committee report, consensus conference	

	c) Challenges in implementation of EBP in Speech-language Pathology and audiology in India and future directions d) Concepts related to randomized control trials: Comparative groups- allocation concealment / random allocation; importance of participation and follow up in understanding, evaluating and applying randomized controlled trial results e) Methods of carrying out therapy trials; execution, indexing and reporting of therapy trials – efficacy studies; Conventions to study outcomes – i) Absolute risk reduction, ii) Absolute benefit increase, iii) Absolute risk increase, and iv) Absolute benefit reduction f) Systematic review and meta-analysis; importance of research publications in terms of systematic review, meta-analysis, clinical practice guidelines, health technology assessments.	
Practicum	• Review research methods and statistics used in publications in the field of communication disorders in blocks of 5 years from 2000. • Two journal articles should be reviewed by each student for variables, research methods and appropriateness of statistics.	
References	Unit 1 • Bhopal, R. S. (2002). Concepts of epidemiology: An integrated introduction to the ideas, theories, principles, and methods of epidemiology. Oxford University Press. • Broota (1989). Experimental design in behavioral research. Eastern New Delhi, Wiley. • Brownson, R. C., & Petitti, D. B. (Eds.). (2006). Applied epidemiology: Theory to practice (2nd ed). Oxford University Press. • Coughlin, S. S., & Beauchamp, T. L. (Eds.). (1996). Ethics and epidemiology. Oxford University Press. • Doehring (1988). Research strategies in human communication disorders. Austin: Proed. • Elwood, J. M. (2000). Critical appraisal of epidemiological studies and clinical trials (2. ed., reprint). Oxford Univ. Press. • Frey (1991). Investigating communication. An introduction to research methods. Inglewood Cliffs: Prentice Hall.	

	• Grosof, M.S., & Sardy, H. (1985). A research primer for the social & behavioral sciences. New York: Academic Press. • Haynes, R. B. (Ed.). (2006). Clinical epidemiology: How to do clinical practice research (3rd ed). Lippincott Williams & Wilkins. • Haynes, W. O. & Johnson, C. (2009). Understanding Research and Evidence based practice in communication disorders. Boston: Pearson. • Hegde, M.N. (2003). Clinical Research in Communicative Disorders. Principles and Strategies, Boston: College-Hill Press. • Hegde, M.N. (1994). Clinical Research in Communicative Disorders. Principles and Strategies. Austin: ProEd. • Hegde, M. N., & Salvatore, A. P. (2021). Clinical research in communication disorders: Principles and strategies (Fourth edition). Plural Publishing. • Jekel, J. F., Katz, D. L., & Elmore, J. G. (2001). Epidemiology, biostatistics, and preventive medicine (2. ed). Saunders. • Kelsey, J. L. (Ed.). (1996). Methods in observational epidemiology (2. ed). Oxford University Press. • Kleinbaum, D. G., Barker, N. D., & Sullivan, K. M. (2007). A Pocket Guide to Epidemiology. Springer Science Business Media, LLC. https://doi.org/10.1007/978-0-387-45966-0 • Lindlof (1995). Qualitative communication research methods. California: Sage Publications. • Meline, T. (2006). Research in communication sciences and disorders: Methods-applications-evaluations. Upper Saddle River, N.J.: Pearson Education • Maxwell Satake (1997). Research and statistical methods in communication disorders. Baltimore: Williams & Wilkins. • Pannbaker, M.H. (1994). Introduction to clinical research in communication disorders. San Diego: Singular Publishing Group. • Schiavetti, N, Metz, D.E. & Orlikoff, R.F. (1997). Evaluating research in communication disorders. Boston: Allyn & Bacon. • Orlikoff, R. F., Schiavetti, N., & Metz, D. E. (2015). Evaluating Research in Communication Disorders. New York: Pearon. • Rothman, K. J. (2012). Epidemiology: An introduction (2nd ed). Oxford University Press. • Silverman, F.H. (1985). Research design and evaluation in speech language pathology, Audiology. Asking questions & answering. New Jersey: Prentice Hall.	
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- Silverman, F.N. (1988) Research designs in speech pathology and audiology. Boston: Allyn & Bacon.
- Sylvia, W. S. (2004). Biostatistics and epidemiology : a primer for health and biomedical professionals. New York : Springer-Verlag,
- Tucker (1981). Research in speech communication. Inglewood Cliffs: Prentice Hall.
- Ventry, I. M. & Schiavetti, N. (1980). Evaluating research in speech pathology and Audiology. London: Addison Wesley.

Unit 2

- Argyrous, G. (2014). Statistics for Research. 2nd Ed. New Delhi: SAGE Publications (SA).
- Bernard Rosner. (2011). Fundamentals of Biostatistics (7th Ed.). Cengage Learning, Inc.
- Brownson, R. C., & Petitti, D. B. (Eds.). (2006). Applied epidemiology: Theory to practice (2nd ed). Oxford University Press.
- David C. Howell. (2014). Fundamental Statistics for the Behavioral Sciences (8th Ed.). Jon-David Hague publishers.
- Cohen, B.H (2013), Explaining Psychological Statistics, (Fourth edition) Wiley.
- Gupta, K.R. (2014). Statistics. Vol. 1. New Delhi: Atlantic Publishers & Distributors (P) Ltd.
- Gupta, K.R. (2014). Statistics. Vol. 2. New Delhi: Atlantic Publishers & Distributors (P) Ltd.
- Field, A. (2013). Discovering Statistics using IBM SPSS Statistics. 4th Ed. New Delhi: SAGE Publications.
- Field, A, Miles, J,& Field, Z. (2012). Discovering Statistics using R. 4th Ed. New Delhi: SAGE Publications.
- Martin, W.E. & Bridgmon, K.D. (2012). Quantitative and Statistical Research Methods – From Hypothesis to Results. San Francisco: Jossey – Bass.
- Kapur, S.K. (2008). Elements of Practical Statistics. 3rd Ed. New Delhi: Oxford & IBH Publishing Co.
- Maxwell, D.L., & Satake, E. (2006). Research and Statistical Methods in Communication Sciences and Disorders. Canada: Thomson Publications.
- Salkind, N.J. (2000). Statistics for people who (think they) hate statistics. California: SAGE Publications.

Unit 3

- Argyrous, G. (2014). Statistics for Research. 2nd Ed. New Delhi: SAGE Publications.
- Bernard Rosner. (2011). Fundamentals of Biostatistics (7th Ed.). Cengage Learning, Inc.

- David C. Howell. (2014). *Fundamental Statistics for the Behavioral Sciences* (8th Ed.). Jon-David Hague publishers.
- Cohen, B.H (2013), *Explaining Psychological Statistics*, (Fourth edition) Wiley.
- Cox, T.F. (2014). *An Introduction to Multivariate Data Analysis*. New Delhi: Wiley India (P) Ltd.
- Gupta, K.R. (2014). *Statistics – Vol. 2*. New Delhi: Atlantic Publishers & Distributors (P) Ltd.
- Field, A. (2013). *Discovering Statistics using IBM SPSS Statistics*. 4th Ed. New Delhi: SAGE Publications
- Michael, S.L. (Editor) (1993). *Regression analysis – International handbooks of quantitative applications in the social sciences*. Vol. 2. London: Sage Publications.
- Johnson wichern (1992). *Applied multivariate statistical analysis*. New Jersey: Prentice Hall.
- Martin, W.E. & Bridgmon, K.D. (2012). *Quantitative and Statistical Research Methods – From Hypothesis to Results*. San Francisco: Jossey – Bass.
- Kapur, S.K. (2008). *Elements of Practical Statistics*. 3rd Ed. New Delhi: Oxford & IBH Publishing Co.
- Gibbons, J.D. (1993). *Non-parametric Statistics: An Introduction*. California: Sage Publications
- Leach, C. (1979). *Introduction to Statistics – A Non-parametric approach for the social sciences*. New York: John Wiley & Sons

Unit 4

- Fink, A. (2013). *Evidence-based public health practice*. Sage.
- Haynes, W. O., & Johnson, C. E. (2009). *Understanding research and evidence-based practice in communication disorders: A prime for students and practitioners*. Pearson.
- Hegde, M. N., & Salvatore, A. P. (2021). *Clinical research in communication disorders: Principles and strategies* (Fourth edition). Plural Publishing.
- Irwin, D. L., Pannbacker, M., & Lass, N. J. (2008). *Clinical research methods in speech-language pathology and audiology*. Plural.
- Manchaiah, V., Beukes, E., & Roeser, R. J. (2020). *Evaluating and Conducting Research in Audiology*. Plural Publishing, Incorporated.
- Nelson, L., & Gilbert, J. L. (2021). *Research in communication sciences and disorders: Methods for systematic inquiry* (Fourth edition). Plural.
- Orlikoff, R. F., Schiavetti, N., Metz, D. E., & Orlikoff, R. F. (2015). *Evaluating research in communication disorders* (Seventh edition). Pearson.
- Reilly, S., Douglas, J., & Oates, J. (2005). *Evidence-based practice in speech pathology*. Whurr Publishers.

	• Satake, E. (Ed.). (2015). <i>Statistical methods and reasoning for the clinical sciences: Evidence-based practice</i>. Plural Publishing Inc. • Sieber, J., & Tolich, M. (2013). <i>Planning Ethically Responsible Research</i>. SAGE Publications, Inc. https://doi.org/10.4135/9781506335162	
<u>Course: 1.4 (HC)</u> <u>Clinical Linguistics</u>		
Objectives	At the end of the course, the student will be able to l Obtain the knowledge of basics of Clinical linguistics and clinical relevance of general linguistics. • Discuss the acquisition process and related disabilities pertaining to various components of language • Discuss general concepts, theoretical background and issues related to socio-linguistics • Discuss the multilingual and multicultural issues in rehabilitation with special reference to India • Carry out researches in the area of Linguistics and language disorders.	
Unit 1	Introduction to Clinical Linguistics; Phonological acquisition and related disability a) Introduction of Clinical Linguistics, The Scope of Linguistics in clinical field. b) Principles of General Linguistics and their clinical relevance. c) Phonological acquisition d) Phonological disability.	11 Hour
Unit 2	Grammatical and semantic acquisition and related disabilities a) Grammatical acquisition b) Grammatical disability c) Semantic acquisition d) Semantic disability	11 Hours
Unit 3	Pragmatics, its acquisition and related disabilities; Sociolinguistic concepts relevant to Speech language pathologists	13 Hours

	a) Pragmatics – Theoretical background: Discourse, Deixis, Maxims and Truth relations b) Pragmatic development 3.3 Pragmatic disability with respect to some clinical disorders c) Sociolinguistic concepts relevant to Speech language pathologists, Language and dialects issues, various types and dialects. Diglossia, Stylistic variation of language-registers, Language contact-Creoles, Pidgins · Language maintenance, Language Shift and Language Death. d) Language Deficiency.	
Unit 4	Multilingual and multicultural issues in communication a) India as a multilingual nation– A brief introduction to the major language families of India b) Relation between language and culture, Language and thought relationship in view of Sapir-Whorf hypothesis: Linguistic determinism and Linguistic relativity c) Cultural issues- Cultural issues in verbal and non-verbal communication d) Multicultural and multilingual issues in rehabilitation with special reference to India	11 Hours
References	Unit 1 • Ball, M., J., Perkins, M., R., Müller, N. & Howard, S. (2008). The handbook of clinical linguistics. (Eds). Oxford: Blackwell Publishing. • Crystal, D. (2001). Clinical Linguistics. In M. Aronoff & J. Rees-Miller, The Blackwell handbook of linguistics (pp.673-82). Oxford: Blackwell. • Cummings, L. (2008). Clinical linguistics. Edinburgh: Edinburgh University Press Ltd. · • Victoria, F., Hayes, B., Curtiss, S., Szabolcsi, A., Stowell, T., & Steriade, D. (2000). Linguistics: An introduction to linguistic theory. Oxford: Blackwell. • Gleason, J. B., & Ratner, N. B. (2009). The development of language. Boston: Allyn and Bacon. • Lacy, D. P. (2007). The Cambridge handbook of phonology. Cambridge: Cambridge University Press. (Chapters: Introduction, 2,4,9,23 & 25) • Ladefoged, P. (1982). A course in phonetics 2nd ed. London: Harcourt Brace Jovanovich. • Pamela, G. (1987). Clinical phonology 2nd ed. London: Croom Helm. linguistics. (Eds). Oxford: Blackwell Publishing. c) Bishop, D. V. M., & Leonard, L. B. (2007). Speech and language impairments in children. USA: Psychology • Bonvillian, N. (2011). Language, culture and communication. New Jersey: Pearson Education.	

	• Pressacy, D. P. (2007). The Cambridge handbook of phonology. Cambridge: Cambridge University Press. • Wei, L. (2014). Applied linguistics.UK: Wiley Blackwell. • Crystal, D. (2001). Clinical Linguistics. In M. Aronoff & J. Rees-Miller, The Blackwell handbook of linguistics (pp.673-82). Oxford: Blackwell. • Cummings, L. (2008). Clinical linguistics. Edinburgh: Edinburgh University Press Ltd. • Victoria, F., Hayes, B., Curtiss, S., Szabolcsi, A., Stowell, T., & Steriade, D. (2000). Linguistics: An introduction to linguistic theory. Oxford: Blackwell. • Gleason, J. B., & Ratner, N. B. (2009). The development of language. Boston: Allyn and Bacon. • Lacy, D. P. (2007). The Cambridge handbook of phonology. Cambridge: Cambridge University Press. (Chapters: Introduction, 2,4,9,23 & 25) • Ladefoged, P. (1982). A course in phonetics 2nd ed. London: Harcourt Brace Jovanovich. • Pamela, G. (1987). Clinical phonology 2nd ed. London: Croom Helm. • Parker, F. & Riley, K. (1994). Linguistics for non-linguists. USA: Allyn and Bacon. · • Townend, J., & Walker, J. (2006). Structure of language spoken and written English. USA: Whurr Publishers Limited	
	Unit 2 • Bishop, D. V. M., & Leonard, L. B. (2007). Speech and language impairments in children. USA: Psychology Press. (Chapters: 1, 2, 7) • Bonvillian, N. (2011). Language, culture and communication. New Jersey: Pearson Education. • Cruise, A. (2000). Meaning and language: An introduction to semantics and pragmatics. London: Palgrave MacMillan. • Gleason, J. B., & Ratner, N. B. (2009). The development of language. Boston, Allyn and Bacon. • McLaughlin, S. (1998). Introduction to language development. USA: Singular Publishing Group. • McAllister, J., and Miller, J. (2013). Introductory linguistics for speech and language therapy practice. UK: Wiley Blackwell. • Nida, E. A. (1946). Morphology 2nd ed. Canada, US: The University of Michigan Press.	

	• Nielson, Hanne Riis; Nielson, Flemming (1995). Semantics with applications: A formal introduction 1st ed. Chichester, England: John Wiley & Sons. • Spencer, A. (1999). Linguistics: An introduction. CUP: Cambridge. • Townend, J., & Walker, J. (2006). Structure of language spoken and written English. USA: Whurr Publishers Limited. • Turnbull, K. L. P., & Justice, L. M. (2012). Language development from theory to practice. New Jersey, Pearson Education. • Van Valin., Robert D., & La Polla, Randy. (1997). Syntax: structure, meaning and function. Cambridge: Cambridge University Press. Unit 3 • Allan, B. (2014). The guidebook to sociolinguistics. UK: Wiley Blackwell. • Austin, J. L. (1962). How to do things with words. UK: Oxford University Press. • Bishop, D. V. M., & Leonard, L., B. (2007). Speech and language impairments in children. USA: Psychology Press. (Chapter: 6) • Bonvillian, N. (2011). Language, culture and communication. New Jersey: Pearson Education. • Carston, R. (2002). Thoughts and utterances: The pragmatics of explicit communication. Oxford: Blackwell. • Chambers, J. K. (1995). Sociolinguistic theory (pp.206-208). Oxford, England: Blackwell. • Clark, H. H. (1996). Using language. Cambridge: Cambridge University Press. • Cummings, L. (2014). Pragmatic disorders. New York: Springer • Deckert, S. K., & Vickers, C. H. (2011). An introduction to sociolinguistics, society and identity. New York: Continuum International Publishing Group. • Dijk, T. A. V. (1977). Text and context: Explorations in the semantics and pragmatics of discourse. London: Longman. • Gleason, J. B., & Ratner, N. B. (2009). The development of language. Boston: Allyn and Bacon. • Huang, Y. (2007). Pragmatics. New York: Oxford University Press. • Laurence, R. H., & Gregory, W. (2005). The handbook of pragmatics. UK: Blackwell. • Leech, G. N. (1983). Principles of pragmatics. London: Longman. • Levinson, S. C. (1983). Pragmatics. Cambridge: Cambridge University Press.	
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	• McLaughlin, S. (1998). Introduction to language development. USA: Singular Publishing Group. • McAllister, J., & Miller, J. (2013). Introductory linguistics for speech and language therapy practice. UK: Wiley Blackwell. • Mey, J. L. (1993) Pragmatics: An introduction. Oxford: Blackwell. • Meyerhoff, M. (2006). Introducing sociolinguistics. New York: Routledge. • Milroy, L., & Gordon, M. (2003) Sociolinguistics: Method and interpretation. London: Blackwell Publishing. • Thomas, J. (1995) Meaning in interaction: An introduction to pragmatics. UK: Longman. • Townend, J., & Walker, J. (2006). Structure of language spoken and written English. USA: Whurr Publishers Limited. • Trudgill, P. (2000). Sociolinguistics: An introduction to language and society 4th ed. London: Penguin Books. • Turnbull, K. L. P., & Justice, L. M. (2012). Language development from theory to practice. New Jersey: Pearson Education. • Verschueren, J. (1999). Understanding pragmatics. London, New York: Arnold Publishers. • Wardhaugh, R. (2004). An introduction to sociolinguistics. London: Blackwell Publishing. • Watzlawick, P., Janet, H. B., & Don, D. J. (1967). Pragmatics of human communication: A study of interactional patterns, pathologies, and paradoxes. New York: Norton. • Wei, L. (2014). Applied linguistics. UK: Wiley Blackwell. (Chapter: Part III) • Yule, G. (1996). Pragmatics (Oxford introductions to language study). UK: Oxford University Press.	
	Unit 4 • Abbi, A. (2001). A manual of linguistic field work and structure of Indian languages. (LINCOM handbooks in linguistics 17). Munich: LINCOM Europa. • Barzilai, G. (2003). Communities and law: Politics and cultures of legal identities. Michigan: University of Michigan Press. • Bonvillian, N. (2011). Language, culture and communication. New Jersey: Pearson Education. • Fodor, J. (1975). The language of thought. Cambridge: Harvard University Press. • Jary, D., & Jary, J. (1991). The Harper Collins dictionary of sociology. New York: Harper Collins. • Kay, P., & Kempton, W. (1984). What is the Spair-Whorf Hypothesis? American Anthropologist 86(1), 65-79.	

	• Kroeber, A. L., & Kluckhohn, C. (1952). Culture: A critical review of concepts and definitions. Cambridge, MA: Peabody Museum. • Pease, A. (2004). The definitive book of body language. Bhopal: Manjul Publishing House Pvt. Ltd. • Reese, W. L. (1980). Dictionary of philosophy and religion: Eastern and western thought. New Jersey U.S., Sussex, U.K: Humanities Press. • Wei, L. (2014). Applied linguistics. UK: Wiley Blackwell. (Chapter: Part II) • White, L. (1949). The science of culture: A study of man and civilization. New York: Farrar, Straus and Giroux.	
<u>Course: 1.5 (HC)</u> <u>Neurobiology of Speech-Language and Cognition</u>		
Objectives	After completing this course, the student shall be able to: a) Describe the elements of Neuroscience pertaining to speech and language b) Discuss and interpret the neuro-diagnostic findings c) Explain the role of neurotransmitters in speech, language and its disorders d) Know the effect of aging on CNS structures and assess the functions related to speech and language e) Discuss research studies relevant to neuroscience in speech and language f) Know the use of few laboratory -based procedures	
Unit 1	Anatomy and Physiology of Central Nervous System and Cranial Nerves, Related to Speech and Language a) Anatomical Directions, Gross Anatomy of Central Nervous System, Neuron Structure and Types, Microscopic Structural Divisions of Cerebral Cortex, Brain Plasticity and Blood Supply to CNS. b) Classification of Hemisphere and Lobes, Functional Organization of Brain, Hemispheric Specialization, Interconnectivity of the Brain, Topographical Organization of Cortical Pathways, Sub-Cortical Structures, Connection and Pathways c) Cerebellum- Structure, Connection and Pathways, Brainstem - Structure and Pathways d) Origin and Pathways of Cranial Nerves e) Spinal Cord- Organization and Functions, Sensori-Motor Pathways and Function, Overview of Centripetal and Centrifugal Fibers	20 Hours

Unit 2	Neuro-diagnostic Procedures (clinical, radiological, physiological and behavioral) for Understanding Neurological and Biological Status of Speech-language Mechanisms a) Clinical examination of neurological status and neuro-diagnostic procedures for routine clinical examination - history, physical examination, reflexes, cranial nerve examination, sensory & motor examination, examination of mental functions b) Neuro-imaging procedures: X-Ray, CT scan, MRI, fMRI, TMS, PET, SPECT and others - c) Advantages and disadvantages d) Neuro-physiological procedures - evoked potentials (visual, auditory and somato-sensory), eye-tracking, eletromyography (EMG) - Advantages and disadvantages e) Neuro-behavioral procedures - neurolinguistic investigation, priming and its types, reaction time measures and other related procedures	
Unit 3	Role of Neurotransmitters in the Mediation of Speech-language a) Neurotransmitters – Classification, major location, functions and synthesis / chemical composition b) Signal propagation in the nervous system- ion channels, transport across cell membranes, resting potential and action potential c) Organization and processing of information in brain, receptors, types of synapses, synaptic transmission- direct and indirect, exocytosis and endocytosis d) Role of neurotransmitters in neuropathological conditions leading to speech and related disorders e) Role of neurotransmitters in neuropathological conditions leading to language and related disorders	
Unit 4	Neuroscience of Aging and its Effect on Speech and Language a) Aging- definition, types - (senescence and senility, primary and secondary aging, biological and psychological aging), phenomenon of aging-(neurological, cognitive and behavioral correlates, structural changes with age, brain weight, ventricular size, microscopic changes and atrophy). b) Theories of aging - biological, genetic and environmental, cellular, genetic, cumulative, random cell damage, programmed cell death, high level control of aging, cellular theories, geriatric theories and other theories, c) Age related changes of the organ system- nervous system, special senses, respiratory. Aging language, cognition and speech- primary, secondary and tertiary aging factors in cognition, language, voice, resonance and articulation and swallowing, cognitive aging d) Neurophysiological /functional changes with age: accuracy, speed, range, endurance, coordination, stability	

	and strength, neurobehavioral correlates of aging -lateralization of functions across life span, cerebral asymmetry, electrophysiological and behavioral evidence e) Aging and its effect on speech and language: effects of aging on speech and language across life span: in typical and pathological conditions	
References	Unit 1 4 Arey, L. B. (1973). Developmental Anatomy. Philadelphia, W. B. Saunders Company. 5 Arslan, O. E. (2015). Neuroanatomical Basis of Clinical Neurology. 2nd Edition, New York, CRC Press. 6 Baumgartner, J.M., & Kuehn, L. (1989). Neural Bases of Speech Hearing and Language. San Diego, College-hill press. 7 Benarroch, E. E., Daube, R. J., Flemming, D. K. & Westmoreland, F. B. (2008). Mayo Clinic Medical Neurosciences. 5th Edition, USA, Mayo Clinic Scientific Press. 8 Berlin, C. & Weyand T. G. (2003). Brain and Sensory Plasticity: Language Acquisition and Hearing. New York, Thomson Delmar Learning. 9 Bhatnagar, S. C. (2008). Neuroscience for the Study of Communicative Disorders. 3rd Edition, New York, Wolters Kluwer Publisher. 10 Brewer, C. V. (1961). Organization of the Central Nervous System. London, Heinemann Publisher. 11 Broussard, D. M. (2014). The Cerebellum: Learning Movement, Language, and Social Skills. John Wiley & Sons, Inc. 12 Duffy, J. R. (2013). Neurological Bases of Motor Speech and its Pathologies, In Motor Speech Disorders: Substrates, Differential Diagnosis and Management. 3rd Edition, Missouri, Mosby Publisher. 13 England, M. A. & Wakely, J. (1991). A Colour Atlas of the Brain & Spinal Cord: An Introduction to Normal Neuroanatomy. Wolfe Publishing Ltd. 14 Hendelman, W. J. (2006). Atlas of Functional Neuroanatomy. 2nd Edition, New York, Taylor & Francis. (with Interactive CD- ROM). 15 Jenkins, I. (2000). Biolinguistics: Exploring the Biology of Language. New Delhi, Cambridge University Press. 16 Kemmerer, D. (2015). Cognitive Neuroscience of Language. New York, Psychology Press. 17 Kingsley R. E., (2000). Concise Text of Neuroscience. 2nd edition, New York, Wolters Kluwer Publisher. 18 LaPointe, L. L. (2018). Atlas of Neuroanatomy for Communication Science and Disorder. New York, Thieme Publisher.	

	19 Maassen, B. & Lieshout P. V. (2010). Cerebral Control of Motor Aspect of Speech Production: Neurophysiological and Functional Imaging Data. In Speech Motor Control. Singapore, Oxford University Press. 20 Mildner, V. (2008). Lateralization and Localization of Function. In The Cognitive Neuroscience of Human Communication. New York, Lawrence Erlbaum Associates. 21 Nageswari, K. & Sharma, R. (2006). Practical Workbook of Human Physiology. New Delhi, Jaypee Publisher. 22 Nolte, J. (2009). The Human Brain: An Introduction to its Functional Anatomy. 6th Edition, Mosby Publisher. (Digital Human Brain Software). 23 Palmer, J. M. & Larusso, D. A. (1993). Anatomy for Speech and Hearing- Textbook and Laboratory Manual of Embryology. Philadelphia, W. B. Saunders Company. 24 Petersen, O. H. (2007). Introduction to Nervous System. In Human Physiology. 5th edition, Blackwell Publisher, New York. 25 Petrides, M. (2014). Neuroanatomy of Language Regions of the Human Brain. New York, Academic Press. 26 Scanlon, V. C. & Sanders, T. (1997). The Nervous System. In Understanding Human Structure and Function. Philadelphia, Davis Company. 27 Singh, I. (2007). Textbook of Human Neuroanatomy. 5th Edition, New Delhi, Jaypee Publisher. 28 Snell R. S. (2006). Clinical Neuroanatomy. 6th edition, New York, Lippincott W & W. 29 Zemlin. W. (1998). The Nervous system, in Speech and Hearing Science: Anatomy and Physiology. 4th Edition, Boston, Ally & Bacon. Unit 2 30 Ainsworth W. A. (1990). Advances in Speech, Hearing and Language Processing-A Research Annual. London, Jai Press. 31 Bhatnagar, S. C., (2008). Neuroscience for the study of communicative disorders. 3rd Edition, Wolters Kluwer publisher, New York. 32 Brazis, W. P., Masdeu, C. J. & Biller, J. (2007). Localization in Clinical Neurology. 5th Edition, New Delhi, Lippincott W & W Publisher. 33 Edwin, R. B. & John, A. S. (1994). Neurological Examination in Clinical Practice. London, Oxford University Press. 34 Geraint, F. (2013). Neurological Examination Made Easy. London, Churchill Livingstone Press.	
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	35 Guendouzi, J., Loncke, F., & Williams, M. J. (Eds.). (2023). <i>The Routledge International Handbook of Psycholinguistic and Cognitive Processes</i>. Routledge. 36 Handy, T. C. (2005). <i>Event-Related Potentials: A Methods Handbook</i>. MIT press, London. 37 Kingsley, R. E., (2000). <i>Concise Text of Neuroscience</i>. 2nd Edition, New York, Wolters Kluwer Publisher. 38 Luck, S. J. (2005). <i>An Introduction to the Event-Related Potential Technique</i> Cambridge; England, MIT Press. 39 Mumenthaler, M. Mattle, H. & Taub, E. (2006). <i>Fundamentals of Neurology</i>. New York, Thieme Publisher. 40 Murdoch, B. E., (2010). <i>Acquired Speech and Language Disorders: A Neuroanatomical and Functional Neurological Approach</i>. 2nd Edition, John Wiley & Sons, Ltd, New Delhi. 41 Nageswari, K. & Sharma, R. (2006). <i>Practical Workbook of Human Physiology</i>. New Delhi, Jaypee Publisher. 42 Petersen, O. H. (2007). <i>Introduction To Nervous System</i>, In <i>Human Physiology</i>. 5th edition, New York, Blackwell Publisher. 43 Petrides, M. (2014). <i>Neuroanatomy of Language Regions of the Human Brain</i>. New York, Academic Press. 44 Scanlon, V. C. & Sanders, T. (1997). <i>The Nervous System</i>. In <i>Understanding Human Structure and Function</i>. Philadelphia, Davis Company. 45 Schenkman, M. L., Bowman, J. P., Gisbert, R. L., & Butler, R. B., (2013). <i>Clinical Neuroscience for Rehabilitation</i>. Boston, Pearson Publisher. 46 Stemmer B. & Whitaker H. A. (1998). <i>Handbook of Neurolinguistics</i>. Amsterdam, Elsevier Academic Press. 47 Zigmond, M. J., Rowland, L. P. & Coyle J. T. (2015). <i>Neurobiology of Brain Disorders: Biological Basis of Neurological and Psychiatric Disorders</i>. Academic Press, New York. Unit 3 48 Daniel, E. S. (1961). <i>Electrical Stimulation of the Brain- An Interdisciplinary Survey of Neurobehavioral Integrative Systems</i>. Austin, Hogg Foundation for Mental Health. 49 Haase, H. J. & Janssen, P. A. J. (1965). <i>The Action of Neuroleptic Drugs- A Psychiatric Neurologic and Pharmacological Investigation</i>. Amsterdam, North Holland Press. 50 Holmes, R. L. & Sharp, J. A. (1969). <i>Human Nervous System- A Developmental Approach</i>. London, Churchill Ltd. 51 House, E. L. & Pansky, B. (1967). <i>Functional Approach to Neuroanatomy</i>. 2nd Edition, New York, McGraw-Hill Book Company.	
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	52 Kingsley R. E., (2000). Concise Text of Neuroscience. 2nd Edition, New York, Wolters Kluwer Publisher. 53 Lenneberg, E. H. (1967). Biological Foundation of Language. New York, John Wiley & Sons. 54 Lloyd Lu, K. & Zhong-Lin (2003). Magnetic Source Imaging of the Human Brain. New Jersey, Lawrence Erlbaum Associates Publishers. 55 Murdoch, B. E., (2010). Acquired Speech and Language Disorders: A Neuroanatomical and Functional Neurological Approach. 2nd Edition, New Delhi, John Wiley & Sons Ltd. 56 Roger, I. (2008). Neuroimaging in Communication Science and Disorders. San Diego, Academic Press Inc. 57 Schenkman, M. L., Bowman, J. P., Gisbert, R. L., & Butler, R. B., (2013). Clinical Neuroscience for Rehabilitation. Boston, Pearson Publisher. 58 Sidman, R. L. & Sidman R. L. (1965). Neuroanatomy - Programmed Text. New York, Little, Brown & Company. 59 Walshe, F. & Walshe, J. (1970). Diseases of the Nervous System. London, E & S Livingstone. 60 Wyke, B. (1969). Principles of General Neurology, Introduction to the Basic Principles of Medical and Surgical Neurology. New York, Elsevier Publishing Company. 61 Zigmond, M. J., Rowland, L. P. & Coyle J. T. (2015). Neurobiology of Brain Disorders: Biological Basis of Neurological and Psychiatric Disorders. New York, Academic Press. Unit 4 62 Frolkis, V.V. & Bezrukov, V. V. (1979). Aging of the Central Nervous System. New York, S. Karger. 63 Guido, F. (1997). Brain Plasticity: Development and Aging. New York, Plenum Press. 64 Hanna, K. U. (1985). Aging Brain: Communication in the Elderly. London, Taylor And Francis Ltd. 65 Harman, D. & Mark, J. (1976). Aging: Clinical, Morphologic and Neurochemical Aspects in the Aging Central Nervous System. Amsterdam, Excerpta Media. 66 Herbert, J. O. & Jane, E. O. (2011). Aging and Communication. Austin, Pro-Ed. 67 James, E. B., & Warner, K. S. (1996). Hand Book of the Psychology of Aging. New York, Academic Press Inc. 68 Kathryn, A. B., & Alfred W. K. (1987) Communication and Cognition in Normal Aging and Dementia. Austin, Pro-Ed. 69 Louise, M. H. & Linda, E. W. (2003). Communication Disability in Aging. New York, Thomson Delmar Learning. 70 Marcotte, T. D. & Grant I. (2010). Normal Aging and Everyday Functioning. In Neuropsychology of Everyday Functioning. Guilford Press, New York.	
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	71 Philip, F. R. (1986). Adult Development and Aging. Boston, Allyn & Bacon Publisher. 72 Ripich, D. N. (1991). Handbook of Geriatric Communication Disorders. Austin, Pro –Ed. 73 Robert, N. B. & Myrna I. L. (1982). Aging and Mental Health: Positive Psychosocial and Biomedical Approaches. St. Louis, C.V. Mosby Company.	
<u>Course: 1.6a (SC)</u> <u>Entrepreneurship, Communication and Leadership</u>		
Objectives	After the completion of the course, students should be able to a) develop and manage work effectively in different set ups, b) plan and manage audiology/speech language centers in different setups, c) demonstrate effective written and oral communication skills, and d) collaborate and liaise with other professionals/general public on issues relating to disability	
Unit 1	Introduction to Business Management a) Concept, nature and principles of business management in speech-language pathology b) Managerial skills: Art and science of management c) Process of management d) Levels of management and functions at different levels e) Introduction to health economics: Micro and macro economics g) Forms of business, Staffing, Marketing and the new venture in the field of Speech Language Pathology	
Unit 2	Planning Business/Practice/Institution a) Concept and definition and essentials of strategic planning b) Strategies, policies and organization c) Economic implication of Speech Language Pathology practice d) Planning based on demand and supply of speech and hearing services e) Office management system f) Accounting and fiscal management: Determining capital requirements, raising capital; Financial planning and management; Financial management (Budgeting & Purchase formalities) Starting a new business, Feasibility studies g) Marketing/branding business	

Unit 3	Legal/ethical Consideration in Practice Management a) Legal consideration for establishing speech-language pathology practice b) Ethics of business management in speech-language pathology and audiology c) Competitions in speech-language pathology and audiology practice d) Marketing in speech language pathology practice e) Ethics in marketing speech-language pathology and audiology practice	
Unit 4	Business Communication and Leadership a) Forms and types of communication, Principles of effective communication in business management b) Communication with clients, colleagues, manufacturers and other stake holders c) Communications with other professionals, government and non-government organizations d) Maintaining practice and policy manuals e) Barriers in communication f) Decision making and conflict management h) Concept, definition and role of leadership i) Developing leadership at different levels (individual, team, organizational, society, national and global) j) Role of a leader at different levels k) Role of leader in conflict management l) Ethics, Social responsibility and accountability of a leader m) Best practices of an effective leader	
References	Unit- 1 • Vairdot, E (2017). Timeless principles of successful business strategy. Springer-Verlag, Germany Unit-2 • Glaser, R.G.,Trayner, R.M (2018). Strategic Practice Management: Business consideration for Audiologists and other health care professionals, Plural Publishers • Northouse, Peter G. (2016). Leadership: Theory and Practice. Los Angeles: Sage Publications Unit-3 • Kotler Philip (2016). Marketing Management: Analysis, Planning, Implementations and Control, Pearson Education, New Delhi.	

	Unit-4 • Ramachandran, V., Stacch, B.A. (2013). Professional communication in Audiology. Plural publishers • Saxena, Ranjan (2009). Marketing Management, McGraw Hill. • Taylor, B (2015) (Eds). Marketing in an Audiology Practice. Plural Publishers	
<u>Course: 1.6b(SC)</u> <u>Speech and Language Perception</u>		
Objectives	After going through this course the student will be able to explain a) Fundamentals of Speech and language processing b) Theoretical understanding of speech language processing c) Methods used in research on speech and language processing d) Speech and language processing in clinical population	
Unit 1	Introduction to Speech Processing a) Introduction to speech Processing • Basic issues in speech perception: Linearity, segmentation, lack of invariance, units of perceptual analysis – phoneme, syllable, word or beyond, • perceptual constancy in speech – talker variability, variability in speaking rate, • McGurk effect, • perceptual organization in speech – Gestalt principles of perceptual grouping, phonetic organization b) Theoretical approaches to speech perception • Acoustic theory of speech perception, • Motor theory of speech perception, • Analysis by synthesis theory, • Auditory theory of vowel perception, • Quantal theory, • Neurological theories, • Pandemonium model, • Direct-realistic approach, • Machine based computation models – TRACE, dual stream model,	12 Hours

	c) Speech processing in the auditory system analysis of speech in the auditory periphery, • representation of speech in the central auditory system – place representation, intensity model, • multistage representation, • categorical perception	
Unit 2	Phonetic perception a) Perception of vowels: Cues of vowels – formants, f0, bandwidth, duration b) Perception of stop consonants: Cues of voicing, place and manner, voice onset time, transition duration, closure duration, burst duration, preceding vowel duration, F0, formants c) Perception of nasals: Formants, duration of nasal murmur d) Perception of fricatives: Formants, frication duration, voicing and place cues e) Perception of other speech sounds: Temporal and spectral cues	
Unit 3	Spoken word recognition and sentence comprehension a) Spoken word recognition • Introduction to spoken word recognition • Methods used in spoken word recognition research: • Word under noise, • filtered, truncated words, • lexical decision, • word spotting, • phoneme triggered lexical decision, • speeded repetition of words, • continuous speech, • tokens embedded in words and non-words, • rhyme monitoring, • word monitoring, • cross-model priming, • ERPs,	

	• FMRI, • McGurk effect b) Models and Issues in spoken word recognition: • The input to the lexicon - lexical access from spectra, constraints of temporal structure – • Cohort model, • interactive models of spoken word recognition - Logogen model, lexical and phonetic processing – phonetic categorization task, phoneme restoration studies, phoneme monitoring task, sentence and word processing, • Processing of ambiguous words. • Neighbourhood activation models, • Elman's simple recurrent networks, • Distributed cohort model, • Plaut and Kello's model, • Adaptive resonance theory, • TRACE model c) Stages and word recognition – • Lexical concept, • Lexical access, • Phonological encoding, • production. d) Sentence comprehension • Goal of sentence comprehension research • Various methods/techniques used for sentences comprehension research • Syntactic category ambiguity • Attachment ambiguity: Models of attachment ambiguity resolution – Garden-path model, Referential theory, Constraint-based approaches	
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	• Empirical studies – (1) structural preferences, eye fixation duration, regressive eye movements, (2) verb information, (3) thematic fit and argument assignment, (4) referential context – prepositional phrase attachment ambiguity, sentence clause/relative clause ambiguity, main clause/ relative clause ambiguity, (5) intonation and prosody. • Event related potentials in sentence comprehension research • Discourse comprehension	
Unit 4	Speech perception in Infants and Clinical Population a) Issues in infant speech perception, methods used in infant speech perception, development of speech perception, relationship between early speech perception and later language development b) Issues in cross-language speech perception, models –Native language magnet model, Perceptual assimilation model c) Speech perceptual deficits in learning disability, aphasia, dysarthria, individuals with hearing loss	12 Hours
References	Unit 1 3 Raphael, L. J., Borden, G. J., & Harris, K. S. (2011). Speech Sciences Primer: Physiology, Acoustics and Perception of Speech. Philadelphia: Lippincott Williams & Wilkins, 4 Pisoni D. B. and Remez R. E.(2005). Introduction. In Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp.1-3). New Jersey: John Wiley & Sons. 5 Remez, R. E.(2005). Perceptual Organization of Speech. In Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp.1-3). John Wiley & Sons 6 Sanders, D. A. (1977). Auditory Perception of Speech. New Jersey: Prentice-Hall. 7 Pardo, J. S., & Remez, R. E. (2006). The perception of speech. In Traxler, M. J., & Gernsbacher, M. A. (Eds). Handbook of Psycholinguistics (pp. 201-248). San Diego: Academic Press, Inc. 8 Fowler, C. A., Magnuson, J. S. (2012). Speech Perception. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). The Cambridge Handbook of Psycholinguistics (pp. 3-25). Cambridge: Cambridge University Press, 9 Tatham, M., & Morton, K. (2011). A Guide to Speech Production and Perception. Edinburgh: Edinburgh University Press. 10 Moore, B. C. J. (2009). Basic auditory processes involved in the analysis of speech sounds. In Moore, B. C. J., Tyler, Lorraine, K. T., & Marslen- Wilson, W. D. (Eds.). The perception of Speech: from sound to meaning (pp.49-78). Oxford: Oxford University Press,	

- 11 Young, E. D. (2009). Neural representation of spectral and temporal information in speech. In Moore, B. C. J., Tyler, Lorraine, K. T., & Marslen- Wilson, W. D. (Eds.). *The perception of Speech: from sound to meaning*(pp.9-48). Oxford: Oxford University Press,
- 12 Eimas, P. D., Miller, J. L. (1981). *Perspectives on the study of speech*. London: Psychology Group.
- 13 Ainsworth, W. A. & Greenberg, S. (2006). Auditory Processing of speech. In Greenberg, S., Ainsworth, W. A. (Eds.). *Listening to Speech: An Auditory Perspective* (pp. 3-20). New Jersey: Lawrence Erlbaum Associates, Inc.
- 14 Hackney, C. M. (2006). From Cochlea to Cortex: A Simple Anatomical Description. In Greenberg, S., Ainsworth, W. A. (Eds.). *Listening to Speech: An Auditory Perspective* (pp. 65-78). New Jersey: Lawrence Erlbaum Associates, Inc.,
- 15 Adams, J. C. (2006). Neuroanatomical considerations of speech processing. In Greenberg, S., Ainsworth, W. A. (Eds.). *Listening to Speech: An Auditory Perspective* (pp. 79-90). New Jersey: Lawrence Erlbaum Associates, Inc.,
- 16 Mayer, G. (2006). Anatomical and physiological basis of speech perception. In Greenberg, S., Ainsworth, W. A. (Eds.). *Listening to Speech: An Auditory Perspective* (pp. 143-158). New Jersey: Lawrence Erlbaum Associates, Inc.
- 17 Kent, R. D. (1997). *The Speech Sciences*. San Diego: Singular Publishing Group, Inc.
- 18 Pisoni, D. B. (1992). Talker Normalization in Speech Perception. In Tohkura, Y., Vatikiotis-Bateson, E., & Sagisaka, Y. (Eds.). *Speech Perception, Production, and Linguistic structure* (pp.143-154). IOS Press.
- 19 Pickett, J. M. (1980). *The sounds of speech communication: A primer of acoustic phonetics and speech perception*. Boston: Allyn and Bacon,
- 20 Johnson, K. (2005). Speaker Normalization in Speech Perception. In Pisoni, D. B., & Remez, R. E. (2005). *Handbook of Speech Perception* (pp.363-389). John Wiley & Sons.
- 21 Syrdal, A. K., and Gopal, H.S., (1986). A perceptual model of vowel recognition based on representation of American English vowel, *JASA*, 79, 1086 – 1100.

Unit 2

- 22 Moore, B. C. J., Tyler, Lorraine, K. T., & Marslen- Wilson, W. D. (2009). *The perception of Speech: from sound to meaning*. Oxford: Oxford University Press.
- 23 Pickett, J. M. (1999). *The Acoustics of Speech Communication: Fundamentals, Speech Perception Theory, and Technology*. Boston: Allyn and Bacon,

	24 Pickett, J. M. (1980). The sounds of speech communication: A primer of acoustic phonetics and speech perception. Boston: Allyn and Bacon. 25 Raphael, L. J., Borden, G. J., & Harris, K. S. (2011). Speech Sciences Primer: Physiology, Acoustics and Perception of Speech. Philadelphia: Lippincott Williams & Wilkins.	
	Unit 3 26 Dahan, D., & Magnuson, J. S. (2006). Spoken word recognition. In Traxler, M. J., & Gernsbacher, M. A. (Eds). Handbook of Psycholinguistics (pp.249-284). Academic Press, Inc. 27 Samuel, A. G., & Sumner, M. (2012). Current Directions in Research in Spoken Word Recognition. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). The Cambridge Handbook of Psycholinguistics (pp.61-75). Cambridge: Cambridge University Press. 28 Magnuson, J. S., & Mirman, D., & Harris, H. D. (2012). Computational Models of Spoken Word Recognition. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). The Cambridge Handbook of Psycholinguistics (pp.76-103). Cambridge: Cambridge University Press. 29 Newman, R. L., Forbes, K., & Connolly, J. F. (2012). Event-related potentials and magnetic fields associated with spoken word recognition. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). The Cambridge Handbook of Psycholinguistics (pp.127-158). Cambridge : Cambridge University Press. 30 Tatham, M., & Morton, K. (2011). A Guide to Speech Production and Perception. Edinburgh: Edinburgh University Press. 31 Morris, R. K. (2006). Lexical processing and sentence context effects. In Traxler, M. J., & Gernsbacher, M. A. (Eds). Handbook of Psycholinguistics (pp.377-402). Academic Press, Inc. 32 Pickering, M. J., & van Gompel, R. P. G. (2006). Syntactic Parsing. In Traxler, M. J., & Gernsbacher, M. A. (Eds). Handbook of Psycholinguistics (pp.455-504). Academic Press, Inc. 33 Farmer, T. A., Misyak, J. B., & Christiansen, M. H. (2012). Individual differences in sentence processing. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). The Cambridge Handbook of Psycholinguistics (pp.353-364). Cambridge: Cambridge University Press. 34 Osterhout, L., Kim, A., & Kuperberg, G. R. (2012). The Neurobiology of Sentence Comprehension. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). The Cambridge Handbook of Psycholinguistics (pp.365-389). Cambridge: Cambridge University Press.	

- 35 Roland, D., & Hare, M. (2012). Computational and Corpus Models of Human Sentence Comprehension. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). *The Cambridge Handbook of Psycholinguistics* (pp.390-408). Cambridge: Cambridge University Press.
- 36 Molfese, D. L., Key A. P. F., Maguire M. J., Dove G. O. and Molfese V. J. (2005). Event-Related Evoked Potentials (ERPs) in Speech Perception. In Pisoni, D. B., & Remez, R. E. (2005). *Handbook of Speech Perception* (pp. 99-121). John Wiley & Sons.
- 37 Stevens, K. N. (2005). Features in Speech Perception and Lexical Access. In Pisoni, D. B., & Remez, R. E. (2005). *Handbook of Speech Perception* pages 124–155. John Wiley & Sons.
- 38 Zwaan, R. A., & Rapp, D. N. (2006). Discourse Comprehension. In Traxler, M. J., & Gernsbacher, M. A. (Eds.). - (pp.725-764). Academic Press, Inc.

Unit 4

- 39 Sanders, D. A. (1977). *Auditory Perception of Speech*. New Jersey: Prentice-Hall,
- 40 Moore, B. C. J., Tyler, Lorraine, K. T., & Marslen- Wilson, W. D. (2009). *The perception of Speech: from sound to meaning*. Oxford: Oxford University Press.
- 41 Traxler, M. J., & Gernsbacher, M. A. (2006). *Handbook of Psycholinguistics*. Academic Press, Inc.
- 42 Eimas, P. D., Miller, J. L. (1981). *Perspectives on the study of speech*. London: Psychology Group.
- 43 Yamada, R. A., & Tohkura, Y. (1992). Perception of American English /r/ and /l/ by native speakers of Japanese. In Tohkura, Y., Vatikiotis-Bateson, E., & Sagisaka, Y. (Eds.). *Speech Perception, Production, and Linguistic structure* (pp.155-174). Tokyo: IOS Press.
- 44 Lively, S. E., Pisoni, D. B., & Logan, J. S. (1992). Some Effects of Training Japanese Listeners to Identify English /r/ and /l/. In Tohkura, Y., Vatikiotis-Bateson, E., & Sagisaka, Y. (Eds.). *Speech Perception, Production, and Linguistic structure* (pp.175-196). Tokyo: IOS Press.
- 45 Strange, W. (1992). Learning Non-native Phoneme Contrasts: Interactions among Subject, Stimulus and Task Variables. In Tohkura, Y., Vatikiotis-Bateson, E., & Sagisaka, Y. (Eds.). *Speech Perception, Production, and Linguistic structure* (pp.197-220). Tokyo: IOS Press.
- 46 Moore, B. C. J. (2006). Factors affecting speech intelligibility for people with cochlear hearing loss. In Greenberg, S., Ainsworth, W. A. (Eds.). *Listening to Speech: An Auditory Perspective* (pp. 273-288). New Jersey: Lawrence Erlbaum Associates, Inc.
- 47 Schwartz, A. I., & Kroll, J. F. (2006). Language Processing in Bilingual speakers. In Traxler, M. J., & Gernsbacher, M. A. (Eds.). *Handbook of Psycholinguistics* (pp.967-1000). Academic Press, Inc.

	48 Houston, D. M. (2005). Speech Perception in Infants. In Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp. 416-448). John Wiley & Sons. 49 Walley, A. C. (2005). Speech Perception in Childhood.. In Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp. 449-468). John Wiley & Sons. 50 Pisoni, D. B.(2005). Speech Perception in Deaf Children with Cochlear Implants. In Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp. 494-523). John Wiley & Sons. 51 Sebastián-Gallés, N. (2005). Cross-Language Speech Perception. In Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp. 546-566). John Wiley & Sons. 52 Weismer, S. E. (2005). Speech Perception in Specific Language Impairment. Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp. 567-588). John Wiley & Sons. 53 Kuhl, P. K., Conboy, B. T., Coffey-Corinam S., Padden, D., Rivera-Gaxiola, M., & Nelson, T. (2008). Phonetic learning as a pathway to language: new data and native magnet theory expanded (NLM-e). Phil. Trans. R. Soc. B,363, 979-1000. 54 Best, C. T. (1991). The Emergence of Native-Language Phonological Influences in Infants: A Perceptual Assimilation Model. Haskins Laboratories Status Report on Speech Research, SR-107/108,1-30. 55 Borrie, S. A., McAuliffe, M. J., & Liss, J. M. (2011). Perceptual learning of dysarthric speech: A review of experimental studies. Journal of Speech Language Hearing Research, 55(1), 290-305. 56 Hayakawa, et al. (2010). Perception of Cleft Palate speech by Japanese Listeners- an assessment of palatalized articulations. Journal of Maxillofac Oral Surg, 9(3), 251-255.	
Course: 1.7 (HC) Clinicals		
	<u>General:</u> a) After completion of clinical postings in, Speech Language Pathology the student will have the concept (Know), ability to apply (Knowhow), demonstrate and record in a clinical diary/log book (Show), and perform (Do) the following on clinical population. b) Decisions in clinical work with the speech-language disorders – assessment, therapy and counseling - shall be guided by research evidence (evidence-based practice).	

	c) Student-clinicians shall periodically communicate with their clinical population on the progress the latter is making with evidence. d) PGs must be exposed to advanced methodologies (use of gadgets and tools), varied service delivery systems (individual, group, camp based, and tele/mobile based), and evidence-based practices in assessment and management of communication and swallowing disorders. Care must be taken to facilitate clinical exposure and training in addition to those focused in the undergraduate program. e) Additional emphasis should be on facilitating interaction with professionals in transdisciplinary management team (medical and non-medical).	
	<u>Knowhow:</u> a) Observe and identify reports of children with neurodevelopmental language disorders in tests such as EEG, CT scan, MRI etc. b) Certification procedures, Rights and privileges of persons with communication disorder, Ethics in clinical practices c) Differential diagnosis of conditions relevant to speech - language as per DSM 5, DSM 5 -TR, ICD 10, ICD 11 & ASHA 2025 classifications d) Application of FFT, LPC, Cepstrum and Inverse Filtering <u>Demonstrate:</u> a) Record language samples of 5 typically developing children and 5 children with language disorders, transcribe the samples using International Phonetic Alphabet (IPA) and perform analysis of language in terms of different components of language b) Demonstration of therapy techniques for disorders of speech sound, and neurodevelopmental language disorders <u>Do:</u> a) Carry out complete evaluation, write detailed evaluation report, counsel persons with communication disorders and their families with reference to the following:	

	• Five children with language disorders using appropriate tests/protocols: Autism Spectrum Disorders, Attention Deficit Hyperactivity Disorder (ADHD), Intellectual Disability, Hearing impairment, Multiple disability and global developmental delay. • Plan and carry out appropriate intervention program for children with neurodevelopmental language disorders. • Plan and carry out intervention program for a child with language disorder using AAC • Acoustic Analysis of Vowels, Diphthongs, Plosives, Nasals, Fricatives, Affricates and Other Speech Sounds Using Spectrograms on PRAAT • Acoustic Analysis in Normal Individual and compare with one case each of following speech Disorders: Hearing Impairment, Stuttering, Dysarthria, Apraxia, Cleft Lip and Palate <u>Evaluation:</u> a) Internal Assessment: A continuous formative assessment will be done by the faculty/clinical staff based on clinical activities of the student throughout the semester. b) Examination at the end of the semester will include work with the clinical population, spot test, OSCE, records, viva-voce	
<u>Course: 2.1 (HC)</u> <u>Voice Science and Disorders</u>		
Objectives	After completing the course, the students will be able to • understand the biomechanics of voice production and role of systems involved in voice production, • explain the principles and methods in the assessment and management of voice disorders, • explain the causes of voice problems of professional voice users, • address the issues that professional voice users are concerned about their voice and maintenance of vocal hygiene, • plan different service delivery models and procedures in a voice clinic • carry out vocal rehabilitation for individuals pre- & post- laryngectomy • critically evaluate research articles related to voice disorders.	
Unit 1	Anatomy & Physiology of Human Larynx	16 Hours

	• Review of Physiology & Neurophysiology of the Adult Lungs and Larynx • Development of Larynx (Phylogenic and Ontogenic) from Infancy to Geriatrics – Vocal Fold, Musculoskeletal Changes • Vibratory Patterns, Pitch and Loudness changes; Vocal Registers • Models of Vocal Fold Vibrations: One Mass Model, Two Mass Model, Multiple Mass Models • Biomechanics of voice production; voice fatigue • Effects of Hormones on Voice in various Conditions (Mutational Voice Conditions, Menstruation, Pregnancy, , Hypo-/Hyperthyroidism Etc.)	
Unit 2	Assessment of Voice Disorders • Aerodynamic Measures – Various Lung Volume, Maximum Phonation Duration (MPD), Mean Airflow Rate (MAFR), S/Z Ratio, Nasalance, Oral and Nasal Pressure, Flow Related Measures Specific to Sub Glottal Measures. • Perceptual Assessment (Children and Adult): Grade, Roughness, Breathiness, Asthenia, Strain (GRBAS), Consensus Auditory Perceptual Evaluation–Voice (CAPE-V), Buffalo Voice Assessment Scale, Self Assessment Scales (Voice Handicapped Index (VHI), Voice Related Quality of Life, (V-RQOL), and Iowa Patient's Voice Index, (IPVI) • Objective Assessment: Non Invasive - Frequency, Intensity, Perturbation, Noise, Tremors, Voice Quality, Voice Load, Voice Fatigue, Voice Range Electrolaryngogram (ERG), Electromyogram (EMG), Inverse-Filtering, Multiparametric Approach Spectral Measures; Invasive - Laryngeal Mirror, Indirect Laryngoscope, Endoscopy, Ultra Sound Imaging, Stroboscopy, High-Speed Image Capture.	16 Hours
Unit 3	Voice in Different Laryngeal Conditions & Laryngectomy • Congenital Conditions of Voice Problems • Differential Diagnosis of: Inflammations, Mass Lesions of Vocal Folds, Paralysis, Hemorrhage, Ulcer, Spasm, Tremor, Tumor, Muscle Tension Dysphonia (MTD), Laryngo Pharyngeal Reflux (LPR) & Gastro Esophageal Reflux Disorders (GERD), Sulcus Vocalis, Transsexual Voice. • Laryngectomy: impact on respiratory, swallowing functions, overview of surgical procedures and post operative care • Voice characteristics in elderly • Professional Voice Users: vocal demands of elite and non elite professions; impact of occupational hazards;	20 Hours

Unit 4	Management of Different Voice Disorders & Professional Voice Users • Principle of Voice Therapy – Hygienic, Symptomatic, Physiologic, Psychogenic, Eclectic Approaches. • Voice Therapy for Hyper & Hypo Functional Conditions – Facilitation Techniques, Resonance Voice Therapy (RVT), Vocal Functional Exercise (VFE), Semi-Occluded Vocal Tract (SOVT), Lee Silverman Voice Treatment (LSVT), Laryngeal Manipulation, Laryngeal Manual Therapy (LMT), Etc. • Professional Voice Users: habilitation for singers & other elite vocal users and teachers & other non-elite vocal users; • Voice Enhancement Methods for Professional Voice Users (Non Singers) • Medical management: pharmacological and phonosurgery • Voice therapy for laryngectomy: voice prosthesis and communication strategies, multidisciplinary approach and overview of technological advances • Evidence Based Voice Practice • Tele-rehabilitation for persons with voice disorders • Rights, privileges and disability certification for persons with voice disorders and laryngectomy as per the RPWD Act 2016	20 Hours
References	Common • Ferrand, C. T. (2019). Voice disorders: Scope of theory and practice. Pearson Higher • 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 Jersey. • 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., Hoffman, B. (2022). Voice Disorders. United States: Plural Publishing, Incorporated. • Watts, C. R., & Awan, S. N. (2019). Laryngeal Function and Voice Disorders: Basic science to clinical	

practice. (1st Ed.). Thieme Medical Publishers Inc.

Unit 1

- Culbertson, W. R., Cotton, S. S., & Tanner, D. C. (2006). Anatomy and Physiology Study Guide for Speech and Hearing. Plural Publishing, San Diego.
- Fuller, D. R., Pimentel, J. T., & Peregoy, B. M. (2012). Applied Anatomy and Physiology for Speech Language Pathology & Audiology. Lippincott Williams & Wilkins, Baltimore, MD
- Seikel, J., King, D., & Drumright, D. (2015). Anatomy & Physiology for Speech, Language, and Hearing, V Edition. Cengage Learning
- Zemlin, W. R. (1998). Speech and Hearing Science: Anatomy and Physiology. Allyn & Bacon, Needham Heights, Massachusetts

Unit 2

- Ferrand, C. T. (2014). Speech Science: An Integrated Approach to Theory and Clinical Practice, III Edition. Pearson Education, Inc.
- Raphael, L. J., Borden, G. J., & Harris, K. S. (2011). Speech Science Primer: Physiology, Acoustics and Perception of Speech, VI Edition. Lippincott Williams & Wilkins, Baltimore, MD

Unit 3

- Ferrand, C. T. (2014). Speech Science: An Integrated Approach to Theory and Clinical Practice, III Edition. Pearson Education, Inc.
- Baken, R. J., & Orlikoff, R. E. (2010). Clinical Measurement of Speech and Voice, II Edition. Delmar, Cengage Learning, New York
- Greene, M. C. L., & Mathieson, L. (1989). The Voice and its Disorders. London: Whurr Publishers
- Paul, R., & Casella, P. W. (2007). Introduction to Clinical Methods in Communication Disorders, II Edition. Paul H. Brookes Publishing Co. Inc. Baltimore, Maryland

Unit 4

- Behrman, A., Haskell, J. (2019). Exercises for Voice Therapy: Third Edition. United States: Plural Publishing, Incorporated.

	• Boone, D. R., McFarlane, S. C., Von Berg, S. L. & Zraick, R. I. (2014). The Voice and Voice Therapy, XI Edition. Thieme, New York. • Greene, M. C. L., & Mathieson, L. (1989). The Voice and its Disorders. London: Whurr Publishers • Sapienza, C., & Ruddy, B. H. (2013). Voice Disorders Workbook, II Edition. Plural Publishing, San Diego • Stemple, J. C., Glaze, L., & Klaben, B. (2010). Clinical Voice Pathology: Theory and Management, IV Edition. Plural Publishing, San Diego • Benninger, M. S., & Murry, T. (2008). The Singer's Voice. Plural Publishing, San Diego • Casper, K. J. & Colton R. H (1998). Clinical Manual For Laryngectomy and Head / Neck Cancer Rehabilitation. Sandiego. London • Stewart, C. F., Kling, I. F., & Allen, E. L. (2016). Voice Rehabilitation: Testing Hypotheses and Reframing Therapy. Jones & Bartlett Publishers. • Davies, D. G., & Jahn, A. F. (1998). Care of the Professional Voice: A Management Guide for Singers, Actors and Professional Voice Users. Butterworth-Heinemann, Oxford. • Sataloff, R. T. (2017). Treatment of Voice Disorders, Second Edition. United States: Plural Publishing, Incorporated. • Adler, R. K., Hirsch, S., & Mordaunt, M. (2012). Voice and communication therapy for the transgender/transsexual client: A comprehensive clinical guide. Plural Publishing.	
<u>Course: 2.2 (HC)</u> <u>Dysphagia</u>		
Objectives	At the end of the course, the students will • identify the neuroanatomical and neurophysiological bases for typical and atypical swallowing • learn the development and changes in feeding and swallowing process across lifespan • identify the causes of dysphagia in children and adults • assess swallowing disorders based on evidence-based approaches • design evidence-based intervention approaches • strategize different service delivery models for intervention.	
Unit 1	Anatomy, Physiology, Development and factors associated with swallow • Structures involved in three phases of swallow • Central and peripheral nervous system control • Physiology of swallowing process	

	• Changes in swallow across life span • Factors associated with swallow: cognition, respiration and sensory, motor, psychological, environmental	
Unit 2	Assessment and management of Dysphagia in adults Assessment • Aetiologies and clinical manifestation of dysphagia (structural, neurological, psychological, infections, and iatrogenic) • Team approach to assessment of dysphagia • Clinical assessment of swallowing: Clinical bedside screening and evaluation using published protocols , clinical swallow evaluation procedures and protocols. • Instrumental evaluation: modified barium swallow / videofluoroscopic study of swallow, flexible endoscopic examination of swallowing, other instrumental evaluation (e.g., Manometry, EMG, acoustic analysis of Swallowing etc.) • Differential diagnosis - oral vs. pharyngeal vs esophageal dysphagia • Self-report questionnaires and quality of life assessment for dysphagia Management • Motor learning principles in management of dysphagia • Behavioral management - Compensatory and facilitatory strategies • Adjunct methods in traditional therapy (e.g., biofeedback, neuromuscular electrical stimulation) • Team approach to management of dysphagia • Specific surgical, prosthetic and behavioural management strategies for mechanical causes of dysphagia (tracheostomy, glossectomy, mandibulectomy, oral/ pharyngeal cancer, trismus etc.)	
Unit 3	Assessment and management of Dysphagia in neonates and children • Aetiologies and clinical manifestation of swallowing difficulties in children; (structural, neurological, sensory-motor, cardio-pulmonary, functional disorders of esophagus&GI, metabolic,psycho-social, behavioural) • Assessment of feeding and swallowing: screening in neonates and children, clinical swallow evaluation procedures and protocols. • Specific considerations for instrumental evaluation of swallowing in children.	

	• Behavioural management of dysphagia in neonates and children: Direct and indirect strategies to facilitate safe and efficient feeding	
Unit 4	Other Issues Related to Management & Service Delivery • Prognostic variables and recommendations for alternate methods for feeding • Pharmacological and surgical management of dysphagia, airway management techniques • Aids and Appliances to facilitate feeding • Evidence Based Practice (EBP) in dysphagia • Ethical and cultural considerations • Scope of practice in the area of dysphagia across set-ups: Hospital, institutional (neurorehab, old age homes, nursing care, residential care, etc), telepractice • Comparison of practice guidelines across countries • Setting up a dysphagia clinic: SLP led clinics vs. SLP in a medical team, space and other infrastructural requirements within hospital setup, private clinics, schools and other centers.	
Practicum	• Observe the subjective and objective procedures for a assessment of 2 adults and 2 children with dysphagia • Administer any of the following tests on one child and one adult with feeding and swallowing disorder and submit a report (Manipal Manual for Clinical Evaluation of Dysphagia, Mann Assessment of Swallow Abilities, Swallow Abilities and Functional Evaluation, Clinical Dysphagia Evaluation Protocol, Functional Feeding Assessment-Modified) . • Prepare a clinical case study report (including assessment and management) on any one individual with Dysphagia • Prepare a management plan for Management of Persons with Dysphagia	
References	Common: • Barkmeier-Kraemer, J., Leonard, R. (2023). Dysphagia Assessment and Treatment Planning Workbook: A Team Approach, Fifth Edition. United States: Plural Publishing, Incorporated • Chhetri, D., Dewan, K. (2018). Dysphagia. Netherlands: Elsevier Health Sciences. • Ekberg, O. (Ed.). (2018). Dysphagia: diagnosis and treatment. Springer Science & Business Media. • Groher, M. E. (1997). Dysphagia: Diagnosis and Management (3rd Ed.). USA, Butterworth-Heinemann. • Leonard, R. (2018). Dysphagia Assessment and Treatment Planning: A Team Approach, Fourth Edition. United States: Plural Publishing, Incorporated.	

	• Murry, T., Chan, K., Carrau, R. L. (2020). Clinical Management of Swallowing Disorders. United States: Plural Publishing, Incorporated. • Patel, D. A., Kavitt, R. T., & Vaezi, M. F. (Eds.). (2019). Evaluation and management of dysphagia: an evidence-based approach. Springer Nature. • Perlman, A. L., & Schulze-Delrieu, K. S. (1997). Deglutition and its Disorders: Anatomy, Physiology, Clinical Diagnosis and Management. San Diego, Singular Publishing Group Inc. • Warnecke, T., Dziewas, R., Langmore, S. (2021). Neurogenic Dysphagia. Germany: Springer International Publishing. Unit 1 • Burda, A. N. (2011). Communication and Swallowing Changes in Healthy Aging Adults. Chapter 7 & 8. MA, Jones & Barlett Learning. • Corbin-Lewis, K., & Liss, J. M. (2015). Clinical Anatomy & Physiology of the Swallow Mechanism. (2nd Ed.). USA, Cengage Learning. • McCoy, Y., Wallace, T. (2018). The Adult Dysphagia Pocket Guide: Neuroanatomy to Clinical Practice. United States: Plural Publishing, Incorporated. • Miller, A. J. (1999). Neuroscientific Principles of Swallowing and Dysphagia. San Diego, Singular Publishing Group Inc. • Rosenthal, S. R., Sheppard, J. J., & Lotze, M. (1995). Dysphagia and the Child with Developmental Disabilities: Medical, Clinical, and Family Interventions. University of Michigan, Singular Publishers. Unit 2 • Carrau, R. L., & Murray, T. (1999). Comprehensive Management of Swallowing Disorders. San Diego, Singular Publishing Group. • Desuter, G. (Ed.). (2019). Oropharyngeal Dysphagia: Videoendoscopy-Guided Work-up and Management. Springer. • Kazandjian, M. S. (1997). Communication and Swallowing Solutions for the ALS/MND Community. San Diego, Singular Publishing Group Inc. • Logemann, J. A. (1986). Manual for Videofluorographic Study of Swallowing. London, Taylor & Francis Ltd. • Longemann, J. A. (1983). Evaluation and Treatment of Swallowing Disorders. Austin, TX; Pro-Ed	
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	• Miller, R. M., & Britton, D. (2011). Dysphagia in Neuromuscular Diseases. San Diego, Singular Publishing Group Inc. • Mills, R. H. (2000). Evaluation of Dysphagia in Adults: Expanding the Diagnostic Options. Austin, Pro-Ed Inc. • Murray, J. (1999). Manual of Dysphagia Assessment in Adults. San Diego, Singular Publishing Group, Inc. • Murray, T., & Carrau, R. L. (2006). Clinical Manual of Swallowing Disorders. University of Michigan, Plural Publishing. • Rosenbek, J. C., & Jones, H. N. (2009). Dysphagia in Movement Disorders. San Diego, Plural Publishing Inc. • Smith, B. S., & Adams, M. (2012). Dysphagia: Risk Factors, Diagnosis and Treatment. New York, Nova Science Publishers Inc. • Ward, E. C., & Morgan, A. T. (2009). Dysphagia Post Trauma. San Diego, Plural Publishing Inc. • Yorkston, K. M., Miller, R. M., & Strand, E. (1995). Management of Speech and Swallowing in Degenerative Diseases. Austin, Texas; Pro-Ed Inc. Unit 3 • Arvedson, J. C., Brodsky, L., Lefton-Greif, M.A. (2020). Pediatric Swallowing and Feeding: Assessment and Management. (3rd Edition). Canada, Cengage Learning. • Gallender, D. (1979). Eating Handicaps: Illustrated Techniques for Feeding Disorders. Springfield II: US. Charles C. Thomas. • Hall, K. D. (2001). Pediatric Dysphagia: Resource Guide. Clifton Park; NY, Delmar Learning. • Rosenthal, S. R., Sheppard, J. J., & Lotze, M. (1995). Dysphagia and the Child with Developmental Disabilities: Medical, Clinical, and Family Interventions. University of Michigan, Singular Publishers. • Tuchman, D. N., & Walter, R. S. (1994). Disorders of Feeding and Swallowing in Infants and Children: Pathophysiology, Diagnosis, and Treatment. University of Michigan, Singular Publishers. • Willging, J. P., Miller, C. K., Cohen, A. P. (2019). Pediatric Dysphagia: Etiologies, Diagnosis, and Management. United States: Plural Publishing, Incorporated. Unit 4 • Dikeman, K. J., & Kazandjian, M. S. (1995). Communication and Swallowing Management in Tracheotomized and Ventilator Dependent Adult. Chapter 7 & 8. San Diego, Singular Publishing Group.	
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	- Leonard, R., & Kendall, K. (2008). Dysphagia Assessment and Treatment Planning: A Team Approach. San Diego, Plural Publishing Inc. - Official websites of ASHA, RCSLT, Speech Pathology Australia, ESSD, Japanese Association of Speech LANGUAGE Hearing Therapists, etc. Journals to be referred: - Dysphagia - American Journal of speech language pathology - Perspectives on Swallowing and Swallowing Disorders	
<u>Course: 2.3 (HC)</u> <u>Advances in structural anomalies and Speech sound disorders</u>		
Objectives	After completing this course, the student shall be able to: - Explain the Nature and Measures of Coarticulation - Describe the Nature of Speech Sound Development . - Discuss the Recent Advances in Assessment and Treatment of SSD - Describe the Nature of Speech and Language Deficits in Persons with Structural anomalies - Describe advances in the Assessment of Velopharyngeal Closure and Resonatory Disorders - Discuss advances in the Rehabilitation of Persons with Structural anomalies from the Perspectives of Speech Language Pathologists and Allied Professionals	
Unit 1	Speech Sound Development and Coarticulation a) Speech Sound Development - Phonological Development in monolingual, bilingual and multilingual in typical children (birth to 5 years) - Linear and Non-linear theories of Phonological Development (Linear: Structural, Behavioral, Generative, Natural phonology and Biological; Non-linear: Autosegmental, Feature Geometry, Metrical and Optimality theories) b) Coarticulation	

	• Nature, Definition, Kinds (Anticipatory, Carryover etc.) • Models of Coarticulation - Feature Based, Syllabic, Allophonic, Target, Physiological and Degree of Articulatory Constriction Models • Physiological / Acoustical / Perceptual Studies in Coarticulation • Parameters of Coarticulation, Long Term Effects of Coarticulation (Position & Juncture Effect, Feature Effect, Transition Effect and Direction Effect) c) Coarticulation in Speech Sound Disorders: Measurement of Coarticulation Including Locus Equation d) Critical Evaluation of Research Articles in the area of Co Articulation	
Unit 2	Assessment and Management of Persons with Speech Sound Disorders a) Application of Phonological Theories in Evaluation and Management of SSD b) Different perspectives on Classification of Speech Sound Disorders c) Methods to assess phonetic, phonemic, and phonological awareness aspects in various communication disorders. d) Critical Appraisal of Indian and Western test materials in monolingual, bilingual and multilingual environments e) Recent perspectives on phonetic and phonemic therapy approaches Including Evidence Based intervention of Persons with SSD. f) Software applications and tele -intervention of SSD	
Unit 3	Phonological Development and Velopharyngeal Function in Persons with Maxillofacial Anomalies a) Cleft Lip and palate, and other craniofacial anomalies - causes, characteristics, Problems associated with clefts and craniofacial anomalies – feeding, developmental aspects, resonance, velopharyngeal dysfunction, ENT anomalies, dental anomalies and psychosocial aspects b) Speech sound Development in Children with Cleft Lip and Palate (CLP) with reference to Monolingual, Bilingual and Multilingual children; and methods of investigation in phonological development c) Language development (semantics, morphosyntax and pragmatics) from infancy to adulthood; and methods of investigation in language development d) Velopharyngeal Closure • Normal Physiology • Parameters Affecting Velopharyngeal Closure	

	• Velopharyngeal Dysfunction in Persons with CLP e) Measurement of Velopharyngeal Closure: Subjective methods: Perceptual Protocols Objective methods: • Aerodynamic Measurements • Acoustic Measurements • Imaging Techniques • Studies related to subjective and objective protocols and their correlation	
Unit 4	Assessment and Management of Persons with Maxillofacial Anomalies a) Early Intervention for children with CLP – Evidence Based Practices in Speech Language Therapy; Assessment and management of feeding in infants with CLP b) Relevance and types of Surgical, Orthodontic and Prosthodontic methods in the Management of persons with CLP. c) Evidence Based Speech therapy approaches for speech sound correction and resonance management in Persons with CLP d) Glossectomy and Mandibulectomy: types, characteristics, assessment and management. Role of SLP e) Software applications and tele-intervention f) Rights, privileges and disability certificates for persons with Structural Anomalies	
Practicum	a) Phonological Analysis - Pattern Analysis, ACI, PCC and Other Parameters. b) Observe and Interpret the Ultrasound Images of the Tongue & EMMA c) Use Recent Tests to Analyze Phonological Aspects in the Indian Context d) Perceptual Analysis of Speech Samples of Persons with CLP e) Observe and Interpret the Acoustic and Aerodynamic Measures and Correlate with the Subjective Methods f) Plan Intervention Strategies and Activities for Persons with Maxillofacial Anomalies	
References	Unit 1: • Ball, M. J., & Code, C. (1997). Instrumental Clinical Phonetics. London, Whurr Publisher. • Ball, M. J., & Kent, R. (1997). The New Phonologies: Development In Clinical Linguistics. San Diego: Singular.	

	• Ball, M. J., & Duckworth, M. (1996). <i>Advances in Clinical Phonetics</i>. Amsterdam, John Benjamins Publishers. • Ball, M. J. (2004). <i>Phonetics for Speech Pathology</i>. 2nd Ed. London. Whurr Publishers Ltd. • Bauman-Waengler, J. (2012). <i>Articulatory and Phonological Impairments: A Clinical Focus</i> • Bernthal, J. E., & Bankson, Flipsen, N. W. (2009). <i>Articulation and Phonological Disorders: Speech Sound Disorders in Children</i>. 6th Ed. Boston, Pearson Education. • Clark, J., & Yallop, C. (1990). <i>An Introduction to Phonetics and Phonology</i>. Oxford, Black Well. • Edwards, H T. (2003). <i>Applied Phonetics: Sounds Of American English</i>. 3rd Edn. Delmar, Singular Publishing • Hardcastle, W. J., & Hewlett, N. (1999). <i>Co Articulation Theory, Data and Techniques</i>. New Delhi, Cambridge University Press. • Hewlett, N., & Beck, J. (2006). <i>An Introduction to the Science of Phonetics</i>. New Jersey, Lawrence Erlbaum Associates Publishers. Unit 2 • Bleile, K. M. (2004). <i>Manual of Articulation and Phonological Disorders</i>. Delmar, Centage Learning. • Collins, B., & Mees, I. M. (2008). <i>Practical Phonetics and Phonology: A Resource Book for Students</i>. London, Routledge. • Elbert, M., & Gierut, J. A. (1986). <i>Handbook of Clinical Phonology: Approaches to Assessment and Treatment</i>. San Diego: College Hill Press. • Gordon-Brennan, M. E., & Weiss, C. E. (2007). <i>Clinical Management of Articulatory and Phonologic Disorders</i>. 3rd Ed. USA, Lippincott Williams & Wilkins. • Howell, J., & Dean, E. (1995). <i>Treating Phonological Disorders in Children</i>. London, Whurr Publishers. • Ingram, D. (1990): <i>Phonological Disability in Children</i>. London, Whurr Publisher. • Klein, E. S. (1996). <i>Clinical Phonology: Assessment and Treatment of Articulation Disorders in Children and Adults</i>. San Diego; CA, Singular Publishing Inc. • Ladefoged, P (2001). <i>A Course in Phonetics</i>. Australia, Thomson Learning.	
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- Lowe, R. J. (1994). Phonology. Baltimore, Williams and Wilkins.
- Mac Neilage, P. F. (1983). The Production of Speech. New York, Springer – Verlag.
- Mc Leod, S., & Singh, S. (2009). Speech Sounds: A Practical Guide to Typical and Atypical Speech. San Diego, Plural Publishing.
- Pena Brooks, A., & Hegde, M. N. (2000). Assessment and Treatment of Articulation and Phonological Disorders in Children: A Dual Level Text. Austin; Texas, Pro.Ed.
- Roca, I., & Johnson, W. (1999). A Course in Phonology. Oxford, Blackwell.
- Savithri, S. R., & Sreedevi, N. (2012). Proceedings of National Workshop on Phonological Disorders: Clinical Perspectives. 6.1.2012, AIISH- Available In AIISH Library
- Shriberg, L. D., & Kent, R. D. (1982). Clinical Phonetics. New York, John Wiley and Sons.
- Vihman, M. M. (1996). Phonological Development: The Origins of Language in the Child. Cambridge; MA, Blackwell.
- Yeni-Komshian, G. H., Kavanagh, F. J., & Ferguson, C. A. (1980). Child Phonology. Volume 1. Production. New York, Academic Press Inc.

Unit 3

- Bzoch, K. (1989). Communicative Disorders Related to Cleft Lip and Palate. Boston, Little Brown Co.
- Falzone. P., Jones. M. A., & Karnell. M. P. (2001). Cleft Palate Speech. III Ed., Mosby Inc.
- Falzone. P., Jones. M. A., & Karnell. M. P. (2010). Cleft Palate Speech. IV Ed., Mosby Inc.
- Grabb, W.C., Rosenstein. S.W., Bzoazch, K. R. (1971). Cleft Lip & Palate- Surgical, Dental and Speech Aspects. Boston, Little Brown Co.
- Kummer, A. W. (2001). Cleft Palate and Craniofacial Anomalies. Canada, Singular Publishing.
- Kummer, A. W. (2007). Cleft Palate and Craniofacial Anomalies :The Effects on Speech and Resonance. Singular Publishing. Thompson Learning.
- Moller, T. K., & Starr, E. G. (1992). Cleft Lip and Palate: Interdisciplinary Issues and Management. Austin, Pro –Edition.
- Mcwilliams, B. J. (1990). Cleft Palate Speech. Philadelphia, B. C. Decker.
- Spristersbach, D. (1968). Cleft Palate and Communication. New York, Academic Press.

	• Stenglphofen, J. (Ed) (1993). Cleft Palate; The Nature of Remediation of Communication Problems. London, Whurr Publishers. • Shprintzen, R. J. & Bardach, J. (1995). Cleft Palate Speech Management: A Multidisciplinary Approach. Michigan, Mosby Inc. Unit 4 • 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. (2001). Cleft Palate Speech. III Edition. Michigan, Mosby Inc. • Falzone. P., Jones, M. A., & Karnell, M. P. (2010). Cleft Palate Speech. IV Ed., Michigan, Mosby Inc. • Golding, K. J., & Kushner, G (2001). Therapy Techniques for Cleft Palate Speech and Related Disorders. Delmar, Cengage Learning. • Golding, K. J., & Kushner, G (2004). Therapy Techniques for Cleft Palate Speech and Related Disorders. Singular Thompson Learning • Grunwell, P. (1993). Analysing Cleft Palate Speech. London, Whurr Publishers. • Kahn, A. (2000). Craniofacial Anomalies : A Beginner's Guide for Speech Language Pathologists. California, Singular Publishing Group. • Karlind, M. & Leslie, G. (2009). Cleft Lip and Palate: Interdisciplinary Issues and Treatment. Texas, Pro Ed. • Kummer, A.W. (2007). Cleft Palate and Craniofacial Anomalies: The Effects on Speech and Resonance. New York, Singular Publishing. • Kummer, A.W. (2014). Cleft Palate and Craniofacial Anomalies: The Effects on Speech and Resonance. Delmar, Cengage Learning. • Kushner, G., & Karen, J. (2001). Therapy Techniques for Cleft Palate Speech and Related Disorders. San Diego, London, Singular Publishing Group Inc. • Peterson-Falzone, S. J., Cardomone, J. T., & Karnell, M. P. (2006). The Clinician Guide to Treating Cleft Palate Speech. Mosby, Elsevier.	
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- Ginette, P. (2014). Speech Therapy in Cleft Palate and Velopharyngeal Dysfunction. Guildford, J & R Press Ltd.
- Rogers, D. J., Derek, J. & Hamdan, U. (2014). Video Atlas of Cleft Lip and Palate Surgery. SanDiego, Plural Publishing.

Journals to be referred:

Phonological Disorders

- Applied Linguistics
- Australian Review of Applied Linguistics
- Clinical Linguistics and Phonetics
- First Language
- Folia Phoniatica
- International Journal of Speech Language Pathology
- Journal of Speech Language and Hearing Research
- Language in India
- Journal of Phonetics

Maxillofacial Anomalies

- Journal of Cleft Lip and Palate
- Indian Journal of Cleft Lip and Palate
- The Cleft Palate and Craniofacial Journal
- Journal of Cleft Lip Palate and Craniofacial Anomalies
- Folia Phoniatica
- Journal of Indian Speech and Hearing Association

Course: 2.4 (HC)

Language and Literacy Disorders

Objectives	At the end of the course, the student will be able to: a) explain the relationships among language, literacy, and cognition and specifically the role of oral language in acquisition of literacy skills, b) discuss the development and related disorders pertaining to language and literacy among children, c) discuss evidence-based assessments of language and literacy skills, and d) plan evidence-based intervention for children with a focus on oral language-based interventions	
Unit 1	Reading: Development and Relationship with Language a) Role of oral language in the acquisition of literacy – Aspects of oral language contributing to decoding (e.g., vocabulary and morphosyntax) and reading comprehension (e.g., syntax, syntactic awareness etc.) and spelling (e.g., morphological awareness). Importance of phoneme-grapheme correspondence for reading b) Stages of reading and writing development – emergent literacy to proficient reading comprehension; Models of reading development in English /alphabetic script and other writing systems. c) Concepts related to reading and its acquisition – Decoding, reading accuracy, reading fluency, reading comprehension d) Differences among writing systems for languages e) Foundations for development of reading in languages with different writing systems (Phonological processing, phonological awareness, orthographic skills, visual processing skills, oral language skills)	
Unit 2	Disorders Related Language and Literacy a) Definition and differences among underachievement in school, specific learning disability, reading disability, dyslexia, dysgraphia, dyscalculia, language learning disability, specific language impairment/ Developmental Language Disorder; DSM V, DSM V-TR and ICD 10, ICD 11 classifications; challenges in use of classifications. b) Linguistic characteristics of students with reading/writing/ language/Specific Learning Disabilities c) Issues related to co-morbidity and overlap among phonological disorders, specific language disorders, reading disability and auditory processing disorders with relation to development of reading d) Genetics of literacy disorders (family risk, molecular genetics etc.).	
Unit 3	Assessment of language-based literacy disorders a) Screening of children for language disorders in schools; Standardized tests to assess language and literacy (English and other languages) in children 5-18 years	

	b) Other forms of assessments to identify children with language/learning disabilities - Criterion referenced assessments, language sampling, portfolio, dynamic assessment, curriculum-based assessment etc. c) Informal assessment of different domains – Tasks and stimuli in specific languages for phonological awareness, orthographic skills, phonological processing, oral language skills etc. d) Specific assessment tools for learning disability in India (e.g., NIMHANS battery, Dyslexia Assessment for Languages in India (DALI), Early Literacy Screening Tool (ELST), Dyslexia Assessment Profile in Indian Children (DAPIC) and other published tests) e) Brief overview of assessment of associated areas (auditory processing, visual processing, memory etc.)	
Unit 4	Evidence based Intervention for language-based literacy disorders and Issues related to Service Delivery, Related Laws/Policies a) Intervention approaches to promote • emergent literacy • decoding and early reading skills • development of reading comprehension • spelling and written language output b) Research on cross-linguistics issues in intervention; intervention for children with Bilingual / multilingual background and reading intervention c) Codes of service delivery for school-aged children (clinical, consultative, collaborative, language-based classroom, peer-mediated) d) Team members working children with literacy disorders; Response to Intervention– tiers and their role in instruction for poor readers; role of SLP in Response to Intervention e) Acts, regulations and policies relevant to education and children with special needs in India (e.g., Right to Education Act, Sarva Siksha Abhiyan, regulations related to language exemption in examination, National Open School system). f) Rights, privileges and certification for children with language-based literacy disorders as per RPwD 2016 g) Use of technology and tele-rehabilitation in language intervention h) Dyslexia associations/groups in India	
References	Recommended Reading	

	• Cabell, S. Q., Justice, L. M., Kaderavek, J., Pence, K. L., & Breit-Smith, A. (2008). Emergent literacy: Lessons for success. Plural Publishing. • Carroll, J. M., Bowyer-Crane, C., Duff, F. J., Hulme, C., & Snowling, M. J. (2011). Developing language and literacy: Effective intervention in the early years. John Wiley & Sons. • Hulme, C., & Snowling, M. J. (2009). Developmental disorders of language learning and cognition. John Wiley & Sons. • Justice, L. M. (2006). Clinical approaches to emergent literacy intervention. Plural Publishing. • Nag, S., & Snowling, M. J. (2012). School underachievement and specific learning difficulties. IACAPAP e-Textbook of Child and Adolescent Mental Health. Geneva: International Association for Children and Adolescent Psychiatry and Allied Professions. • Paul, R. & Norbury, C. (2012). Language disorders from infancy through adolescence: Listening, speaking, reading, writing, and communicating (4th Ed.). St. Louis, MO: Elsevier. • Stone, C. A., Silliman, E. R., Ehren, B. J., & Wallach, G. P. (Eds.). (2016). Handbook of language and literacy: Development and disorders (2nd ed.), pp. 339-357. New York, NY: Guilford Press. • Turnbull, K. L. P., & Justice, L. M. (2011). Language development from theory to practice. Pearson Higher Ed.	
<u>Course: 2.5 a(SC)</u> <u>Entrepreneurship, Communication and Leadership</u>		
Objectives	After the completion of the course, students should be able to e) develop and manage work effectively in different set ups, f) plan and manage audiology/speech language centers in different setups, g) demonstrate effective written and oral communication skills, and h) collaborate and liaise with other professionals/general public on issues relating to disability	
Unit 1	Introduction to Business Management a) Concept, nature and principles of business management in speech-language pathology b) Managerial skills: Art and science of management c) Process of management d) Levels of management and functions at different levels e) Introduction to health economics: Micro and macro economics	

	g) Forms of business, Staffing, Marketing and the new venture in the field of Speech Language Pathology	
Unit 2	Planning Business/Practice/Institution a) Concept and definition and essentials of strategic planning b) Strategies, policies and organization c) Economic implication of Speech Language Pathology practice d) Planning based on demand and supply of speech and hearing services e) Office management system f) Accounting and fiscal management: Determining capital requirements, raising capital; Financial planning and management; Financial management (Budgeting & Purchase formalities) Starting a new business, Feasibility studies g) Marketing/branding business	
Unit 3	Legal/ethical Consideration in Practice Management a) Legal consideration for establishing speech-language pathology practice b) Ethics of business management in speech-language pathology and audiology c) Competitions in speech-language pathology and audiology practice d) Marketing audiology practice e) Ethics in marketing speech-language pathology and audiology practice	
Unit 4	Business Communication and Leadership a) Forms and types of communication, Principles of effective communication in business management b) Communication with clients, colleagues, manufacturers and other stake holders c) Communications with other professionals, government and non-government organizations d) Maintaining practice and policy manuals e) Barriers in communication f) Decision making and conflict management h) Concept, definition and role of leadership i) Developing leadership at different levels (individual, team, organizational, society, national and global) j) Role of a leader at different levels k) Role of leader in conflict management l) Ethics, Social responsibility and accountability of a leader	

	m) Best practices of an effective leader	
References	Unit- 1 - Vairdot, E (2017). Timeless principles of successful business strategy. Springer-Verlag, Germany Unit-2 - Glaser, R.G., Trayner, R.M (2018). Strategic Practice Management: Business consideration for Audiologists and other health care professionals, Plural Publishers - Northouse, Peter G. (2016). Leadership: Theory and Practice. Los Angeles: Sage Publications Unit-3 - Kotler Philip (2016). Marketing Management: Analysis, Planning, Implementations and Control, Pearson Education, New Delhi. Unit-4 - Ramachandran, V., Stacch, B.A. (2013). Professional communication in Audiology. Plural publishers - Saxena, Ranjan (2009). Marketing Management, McGraw Hill. - Taylor, B (2015) (Eds). Marketing in an Audiology Practice. Plural Publishers	
<u>Course: 2.5b(SC)</u> <u>Speech Language and Perception</u>		
Objectives	After going through this course the student will be able to explain e) Fundamentals of Speech and language processing f) Theoretical understanding of speech language processing g) Methods used in research on speech and language processing h) Speech and language processing in clinical population	
Unit 1	Introduction to Speech Processing d) Introduction to speech Processing - Basic issues in speech perception: Linearity, segmentation, lack of invariance, units of perceptual analysis – phoneme, syllable, word or beyond,	

	• perceptual constancy in speech – talker variability, variability in speaking rate, • McGurk effect, • perceptual organization in speech – Gestalt principles of perceptual grouping, phonetic organization e) Theoretical approaches to speech perception • Acoustic theory of speech perception, • Motor theory of speech perception, • Analysis by synthesis theory, • Auditory theory of vowel perception, • Quantal theory, • Neurological theories, • Pandemonium model, • Direct-realistic approach, • Machine based computation models – TRACE, dual stream model, f) Speech processing in the auditory system analysis of speech in the auditory periphery, • representation of speech in the central auditory system – place representation, intensity model, • multistage representation, • categorical perception	
Unit 2	Phonetic perception a) Perception of vowels: Cues of vowels – formants, f0, bandwidth, duration b) Perception of stop consonants: Cues of voicing, place and manner, voice onset time, transition duration, closure duration, burst duration, preceding vowel duration, F0, formants c) Perception of nasals: Formants, duration of nasal murmur d) Perception of fricatives: Formants, frication duration, voicing and place cues e) Perception of other speech sounds: Temporal and spectral cues	
Unit 3	Spoken word recognition and sentence comprehension e) Spoken word recognition • Introduction to spoken word recognition • Methods used in spoken word recognition research:	

	• Word under noise, • filtered, truncated words, • lexical decision, • word spotting, • phoneme triggered lexical decision, • speeded repetition of words, • continuous speech, • tokens embedded in words and non-words, • rhyme monitoring, • word monitoring, • cross-model priming, • ERPs, • FMRI, • McGurk effect f) Models and Issues in spoken word recognition: • The input to the lexicon - lexical access from spectra, constraints of temporal structure – • Cohort model, • interactive models of spoken word recognition - Logogen model, lexical and phonetic processing – phonetic categorization task, phoneme restoration studies, phoneme monitoring task, sentence and word processing, • Processing of ambiguous words. • Neighbourhood activation models, • Elman's simple recurrent networks, • Distributed cohort model, • Plaut and Kello's model, • Adaptive resonance theory, • TRACE model	
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	g) Stages and word recognition – • Lexical concept, • Lexical access, • Phonological encoding, • production. h) Sentence comprehension • Goal of sentence comprehension research • Various methods/techniques used for sentences comprehension research • Syntactic category ambiguity • Attachment ambiguity: Models of attachment ambiguity resolution – Garden-path model, Referential theory, Constraint-based approaches • Empirical studies – (1) structural preferences, eye fixation duration, regressive eye movements, (2) verb information, (3) thematic fit and argument assignment, (4) referential context – prepositional phrase attachment ambiguity, sentence clause/relative clause ambiguity, main clause/ relative clause ambiguity, (5) intonation and prosody. • Event related potentials in sentence comprehension research • Discourse comprehension	
Unit 4	Speech perception in Infants and Clinical Population d) Issues in infant speech perception, methods used in infant speech perception, development of speech perception, relationship between early speech perception and later language development e) Issues in cross-language speech perception, models –Native language magnet model, Perceptual assimilation model Speech perceptual deficits in learning disability, aphasia, dysarthria, individuals with hearing loss	
References	Unit 1	

	57 Raphael, L. J., Borden, G. J., & Harris, K. S. (2011). <i>Speech Sciences Primer: Physiology, Acoustics and Perception of Speech</i>. Philadelphia: Lippincott Williams & Wilkins, 58 Pisoni D. B. and Remez R. E. (2005). Introduction. In Pisoni, D. B., & Remez, R. E. (2005). <i>Handbook of Speech Perception</i> (pp.1-3). New Jersey: John Wiley & Sons. 59 Remez, R. E. (2005). Perceptual Organization of Speech. In Pisoni, D. B., & Remez, R. E. (2005). <i>Handbook of Speech Perception</i> (pp.1-3). John Wiley & Sons 60 Sanders, D. A. (1977). <i>Auditory Perception of Speech</i>. New Jersey: Prentice-Hall. 61 Pardo, J. S., & Remez, R. E. (2006). The perception of speech. In Traxler, M. J., & Gernsbacher, M. A. (Eds.). <i>Handbook of Psycholinguistics</i> (pp. 201-248). San Diego: Academic Press, Inc. 62 Fowler, C. A., Magnuson, J. S. (2012). Speech Perception. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). <i>The Cambridge Handbook of Psycholinguistics</i> (pp. 3-25). Cambridge: Cambridge University Press, 63 Tatham, M., & Morton, K. (2011). <i>A Guide to Speech Production and Perception</i>. Edinburgh: Edinburgh University Press. 64 Moore, B. C. J. (2009). Basic auditory processes involved in the analysis of speech sounds. In Moore, B. C. J., Tyler, Lorraine, K. T., & Marslen- Wilson, W. D. (Eds.). <i>The perception of Speech: from sound to meaning</i> (pp.49-78). Oxford: Oxford University Press, 65 Young, E. D. (2009). Neural representation of spectral and temporal information in speech. In Moore, B. C. J., Tyler, Lorraine, K. T., & Marslen- Wilson, W. D. (Eds.). <i>The perception of Speech: from sound to meaning</i> (pp.9-48). Oxford: Oxford University Press, 66 Eimas, P. D., Miller, J. L. (1981). <i>Perspectives on the study of speech</i>. London: Psychology Group. 67 Ainsworth, W. A. & Greenberg, S. (2006). Auditory Processing of speech. In Greenberg, S., Ainsworth, W. A. (Eds.). <i>Listening to Speech: An Auditory Perspective</i> (pp. 3-20). New Jersey: Lawrence Erlbaum Associates, Inc. 68 Hackney, C. M. (2006). From Cochlea to Cortex: A Simple Anatomical Description. In Greenberg, S., Ainsworth, W. A. (Eds.). <i>Listening to Speech: An Auditory Perspective</i> (pp. 65-78). New Jersey: Lawrence Erlbaum Associates, Inc., 69 Adams, J. C. (2006). Neuroanatomical considerations of speech processing. In Greenberg, S., Ainsworth, W. A. (Eds.). <i>Listening to Speech: An Auditory Perspective</i> (pp. 79-90). New Jersey: Lawrence Erlbaum Associates, Inc., 70 Mayer, G. (2006). Anatomical and physiological basis of speech perception. In Greenberg, S., Ainsworth, W. A. (Eds.). <i>Listening to Speech: An Auditory Perspective</i> (pp. 143-158). New Jersey: Lawrence Erlbaum Associates, Inc.	
--	--	--

	71 Kent, R. D. (1997). The Speech Sciences. San Diego: Singular Publishing Group, Inc. 72 Pisoni, D. B. (1992). Talker Normalization in Speech Perception. In Tohkura, Y., Vatikiotis-Bateson, E., & Sagisaka, Y. (Eds.). Speech Perception, Production, and Linguistic structure (pp.143-154). IOS Press. 73 Pickett, J. M. (1980). The sounds of speech communication: A primer of acoustic phonetics and speech perception. Boston: Allyn and Bacon, 74 Johnson, K. (2005). Speaker Normalization in Speech Perception. In Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp.363-389). John Wiley & Sons. 75 Syrdal, A. K., and Gopal, H.S., (1986). A perceptual model of vowel recognition based on representation of American English vowel, JASA, 79, 1086 – 1100. Unit 2 76 Moore, B. C. J., Tyler, Lorraine, K. T., & Marslen- Wilson, W. D. (2009). The perception of Speech: from sound to meaning. Oxford: Oxford University Press. 77 Pickett, J. M. (1999). The Acoustics of Speech Communication: Fundamentals, Speech Perception Theory, and Technology. Boston: Allyn and Bacon, 78 Pickett, J. M. (1980). The sounds of speech communication: A primer of acoustic phonetics and speech perception. Boston: Allyn and Bacon. 79 Raphael, L. J., Borden, G. J., & Harris, K. S. (2011). Speech Sciences Primer: Physiology, Acoustics and Perception of Speech. Philadelphia: Lippincott Williams & Wilkins. Unit 3 80 Dahan, D., & Magnuson, J. S. (2006). Spoken word recognition. In Traxler, M. J., & Gernsbacher, M. A. (Eds.). Handbook of Psycholinguistics (pp.249-284). Academic Press, Inc. 81 Samuel, A. G., & Sumner, M. (2012). Current Directions in Research in Spoken Word Recognition. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). The Cambridge Handbook of Psycholinguistics (pp.61-75). Cambridge: Cambridge University Press. 82 Magnuson, J. S., & Mirman, D., & Harris, H. D. (2012). Computational Models of Spoken Word Recognition. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). The Cambridge Handbook of Psycholinguistics (pp.76-103). Cambridge: Cambridge University Press.	
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	83 Newman, R. L., Forbes, K., & Connolly, J. F. (2012). Event-related potentials and magnetic fields associated with spoken word recognition. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). <i>The Cambridge Handbook of Psycholinguistics</i> (pp.127-158). Cambridge : Cambridge University Press. 84 Tatham, M., & Morton, K. (2011). <i>A Guide to Speech Production and Perception</i>. Edinburgh: Edinburgh University Press. 85 Morris, R. K. (2006). Lexical processing and sentence context effects. In Traxler, M. J., & Gernsbacher, M. A. (Eds). <i>Handbook of Psycholinguistics</i> (pp.377-402). Academic Press, Inc. 86 Pickering, M. J., & van Gompel, R. P. G. (2006). Syntactic Parsing. In Traxler, M. J., & Gernsbacher, M. A. (Eds). <i>Handbook of Psycholinguistics</i> (pp.455-504). Academic Press, Inc. 87 Farmer, T. A., Misyak, J. B., & Christiansen, M. H. (2012). Individual differences in sentence processing. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). <i>The Cambridge Handbook of Psycholinguistics</i> (pp.353-364). Cambridge: Cambridge University Press. 88 Osterhout, L., Kim, A., & Kuperberg, G. R. (2012). The Neurobiology of Sentence Comprehension. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). <i>The Cambridge Handbook of Psycholinguistics</i> (pp.365-389). Cambridge: Cambridge University Press. 89 Roland, D., & Hare, M. (2012). Computational and Corpus Models of Human Sentence Comprehension. In Spivey, M. J., McRae, K., & Joanisse, M. F. (Eds.). <i>The Cambridge Handbook of Psycholinguistics</i> (pp.390-408). Cambridge: Cambridge University Press. 90 Molfese, D. L., Key A. P. F, Maguire M. J., Dove G. O. and Molfese V. J.(2005). Event-Related Evoked Potentials (ERPs) in Speech Perception. In Pisoni, D. B., & Remez, R. E. (2005). <i>Handbook of Speech Perception</i>(pp. 99-121). John Wiley & Sons. 91 Stevens, K. N. (2005). Features in Speech Perception and Lexical Access. In Pisoni, D. B., & Remez, R. E. (2005). <i>Handbook of Speech Perception</i> pages 124–155. John Wiley & Sons. 92 Zwaan, R. A., & Rapp, D. N. (2006). Discourse Comprehension. In Traxler, M. J., & Gernsbacher, M. A. (Eds). - (pp.725-764). Academic Press, Inc. Unit 4 93 Sanders, D. A. (1977). <i>Auditory Perception of Speech</i>. New Jersey: Prentice-Hall, 94 Moore, B. C. J., Tyler, Lorraine, K. T., & Marslen- Wilson, W. D. (2009). <i>The perception of Speech: from sound to meaning</i>. Oxford: Oxford University Press. 95 Traxler, M. J., & Gernsbacher, M. A. (2006). <i>Handbook of Psycholinguistics</i>. Academic Press, Inc.	
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	96 Eimas, P. D., Miller, J. L. (1981). Perspectives on the study of speech. London: Psychology Group. 97 Yamada, R. A., & Tohkura, Y. (1992). Perception of American English /r/ and /l/ by native speakers of Japanese. In Tohkura, Y., Vatikiotis-Bateson, E., & Sagisaka, Y. (Eds.). Speech Perception, Production, and Linguistic structure (pp.155-174). Tokyo: IOS Press. 98 Lively, S. E., Pisoni, D. B., & Logan, J. S. (1992). Some Effects of Training Japanese Listeners to Identify English /r/ and /l/. In Tohkura, Y., Vatikiotis-Bateson, E., & Sagisaka, Y. (Eds.). Speech Perception, Production, and Linguistic structure (pp.175-196). Tokyo: IOS Press. 99 Strange, W. (1992). Learning Non-native Phoneme Contrasts: Interactions among Subject, Stimulus and Task Variables. In Tohkura, Y., Vatikiotis-Bateson, E., & Sagisaka, Y. (Eds.). Speech Perception, Production, and Linguistic structure (pp.197-220). Tokyo: IOS Press. 100 Moore, B. C. J. (2006). Factors affecting speech intelligibility for people with cochlear hearing loss. In Greenberg, S., Ainsworth, W. A. (Eds.). Listening to Speech: An Auditory Perspective (pp. 273-288). New Jersey: Lawrence Erlbaum Associates, Inc. 101 Schwartz, A. I., & Kroll, J. F. (2006). Language Processing in Bilingual speakers. In Traxler, M. J., & Gernsbacher, M. A. (Eds.). Handbook of Psycholinguistics (pp.967-1000). Academic Press, Inc. 102 Houston, D. M. (2005). Speech Perception in Infants. In Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp. 416-448). John Wiley & Sons. 103 Walley, A. C. (2005). Speech Perception in Childhood.. In Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp. 449-468). John Wiley & Sons. 104 Pisoni, D. B. (2005). Speech Perception in Deaf Children with Cochlear Implants. In Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp. 494-523). John Wiley & Sons. 105 Sebastián-Gallés, N. (2005). Cross-Language Speech Perception. In Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp. 546-566). John Wiley & Sons. 106 Weismer, S. E. (2005). Speech Perception in Specific Language Impairment. Pisoni, D. B., & Remez, R. E. (2005). Handbook of Speech Perception (pp. 567-588). John Wiley & Sons. 107 Kuhl, P. K., Conboy, B. T., Coffey-Corinam S., Padden, D., Rivera-Gaxiola, M., & Nelson, T. (2008). Phonetic learning as a pathway to language: new data and native magnet theory expanded (NLM-e). Phil. Trans. R. Soc. B, 363, 979-1000. 108 Best, C. T. (1991). The Emergence of Native-Language Phonological Influences in Infants: A Perceptual Assimilation Model. Haskins Laboratories Status Report on Speech Research, SR-107/108, 1-30.	
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	109 Borrie, S. A., McAuliffe, M. J., & Liss, J. M. (2011). Perceptual learning of dysarthric speech: A review of experimental studies. Journal of Speech Language Hearing Research, 55(1), 290-305. 110 Hayakawa, et al. (2010). Perception of Cleft Palate speech by Japanese Listeners- an assessment of palatalized articulations. Journal of Maxillofac Oral Surg, 9(3), 251-255.	
Course: 2.6 (HC) Clinicals		
	General Consideration Post-graduates (PG) must complete the clinical practicum during their postings in clinics. The clinical postings will provide focused exposure on clinical practice with specific populations (listed below) with communication and swallowing disorders across the lifespan. • The thrust areas of postings of PG students in clinics shall be with children and adults having: ○ Voice disorders including those such as professional voice users, transgenders, and laryngectomee ○ Speech sound disorders (Cleft lip and palate and other disorders) ○ swallowing and feeding disorders due to cancer and its treatment, trauma, • Evidence based practices in assessment and management of communication and swallowing disorders. • Care must be taken to facilitate clinical exposure and training in addition to those focused in the undergraduate program. An additional emphasis should be on facilitating interaction with professionals in transdisciplinary management team (medical and non-medical).	
Objectives	At the end of clinical postings, the students should be able to a) carry out complete and appropriate speech language and swallowing evaluation, counsel and manage persons with communication and swallowing disorders. b) apply, show (in a clinical diary/log book), and perform the following on patients/clients. The below mentioned items in ‘Knowhow, demonstrate and do’ are specifics related to clinical performance in the current semester. These are over and above listed above in point (b) of general considerations in clinicals	
	<u>Know How:</u> Voice and its disorders	

	1. Observation of stroboscopic evaluation of persons with voice disorders as part of team assessment and its interpretation. Dysphagia 1. Protocols for clinical subjective assessment and management of swallowing disorders 2. Procedure and interpretation of instrumental swallow evaluations (Modified barium swallow examination, Flexible endoscopic examination of swallowing). 3. Adjunct therapy options (Neuro-muscular electrical stimulation, biofeedback therapy) Maxillofacial & Speech sound disorders 1. Make a summary report of the articulation and phonological test materials available in the institute (including introduction, instructions, details of stimuli, norms and interpretation of test). 2. Observation of endoscopic examination of persons with cleft lip and palate as part of team assessment. <u>Show/Demonstrate:</u> Voice science and disorders: 1. Measurement of aerodynamic parameters and aerodynamic analysis 2. Carry out and interpret the acoustic measures of voice on two recorded samples and correlate with the perceptual analysis 3. Demonstration of therapy techniques for disorders of voice and laryngectomy Dysphagia: 1. Clinical subjective evaluation of swallowing 2. Flexible Endoscopic Evaluation of swallowing 3. Neuro-muscular electrical stimulation 4. Emergency airway management maneuvers 5. Oral sensory-motor rehabilitation strategies	
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Maxillofacial & Speech sound disorders:-

1. Complete perceptual analysis of speech samples of persons with speech sound disorders and Cleft-lip palate.
2. Demonstration of therapy techniques for disorders of speech sound, and Cleft-lip palate.

Do:**Voice science and its disorders**

1. Record client history (using appropriate proformas) including nature, onset, symptoms, medical & associated problems in minimum of 2 clients with voice disorder.
2. Acoustic analysis of voice – minimum of 6 phononormic (preferably 2 children, 2 adults & 2 geriatrics) & 5 individuals with voice disorder
3. Qualitative/ Perceptual Analysis using standard tools (GRBAS & CAPE-V)
4. Quantitative/ Objective assessment using common instrument / software (PRAAT, MDVP, EGG, Dr. Speech)
5. Aerodynamic analysis using qualitative & quantitative measures - minimum of 5 individuals with voice disorders
6. Interpretation of the results of voice assessment in 5 clients with voice disorders after completion of above mentioned analyses.(Sl no.1-3)
7. Counsel regarding the results of the voice assessment, prognosis and possible management options in 2 clients with voice disorder.

Dysphagia

- a) assess atleast 2 clients (children/adult) with feeding and/or swallowing problems
- b) prepare detailed therapy plan and implement the same for specific short term goals for atleast 2 client with feeding and/or swallowing problems
- c) Administer any of the following tests on one child and one adult with feeding and swallowing disorder and submit a report (Manipal Manual for Clinical Evaluation of Dysphagia, Mann Assessment of Swallow Abilities, Swallow Abilities and Functional Evaluation, Clinical Dysphagia Evaluation Protocol, Functional Feeding Assessment-Modified).
- d) Prepare a clinical case study report (including assessment and management) on any one individual with Dysphagia
- e) Prepare a management plan for Management of Persons with Dysphagia

Maxillofacial and Speech sound Disorders

	Carry out complete evaluation, write detailed evaluation report, counsel persons with communication disorders and their families with reference to the following: • Five children with speech sound disorders – record and transcribe speech samples (word and connected speech), carry out error analysis – pattern analysis, calculate percentage consonant correct, mean length of utterance. • Plan and carry out appropriate intervention program for children with children with speech sound disorders. Carryout a complete Acoustic analysis of normal and disordered population (CLP) and find out temporal and spectral characteristics. 1. Carry out Nasometry for cleft palate cases (2 minimum) 2. Should counsel a R/CLP client using counseling checklists available in OPD. 3. Should observe/take therapy, for 2 clients with Cleft palate and Laryngectomy. Prepare pre therapy assessment, therapy plan, progress/status report, and home training program for Cleft palate and Laryngectomy. (If the cases are not available, the student clinicians can use of the available audio-visual materials) <u>Evaluation:</u> a) Internal Assessment: A continuous formative assessment will be done by the faculty/clinical staff based on clinical activities of the student throughout the semester. b) Examination at the end of the semester will include work with the clinical population, spot test, OSCE, records, viva-voce	
<u>Course: 3.1 (HC)</u> <u>Disorders of Fluency and Prosody</u>		
Objectives	After completing the course, the students will be: a) aware of the recent updates on fluency disorders, its development, and theoretical concepts b) Assess aspects of fluency and dysfluency based on research evidence, c) Apply the principles of evidence-based practice in managing fluency disorders, d) apply aspects of prosody in assessment and management of speech disorders	
Unit 1	Overview of Fluency, Theoretical Concepts Related to Stuttering, and other fluency disorders a) Development of components of fluency and various dimensions of fluency disorders - recent advances in	15 Hours

	conceptualizing fluency, disfluency and related phenomena b) Typical disfluency and developmental stuttering; Stuttering as a co-morbid condition in children and adults c) Research evidences about constitutional factors in stuttering - Theories of stuttering – (linguistic, articulatory, audiological, laryngeal and genetic predisposition) d) Neuro anatomical, neuro-physiological bases of fluency disorders e) Cortical activation patterns in stuttering - a neuromotor problem; Stuttering as a timing disorder; feedback and feed-forward models of stuttering f) Cluttering- characteristics and etiologies g) Neurogenic stuttering – characteristics and etiologies h) Psychogenic and other types of fluency disorders	
Unit 2	Assessment of Fluency Disorders in Children and Adults a) Preliminaries to Assessment (client's need, cultural considerations, stuttering behavior, speech naturalness), Differential diagnosis; Objective and Subjective (ICF based) tools for assessment in children and adults; Self-rating and quality of life, assessment of cognitive dimensions in stuttering b) Assessment of other fluency disorders c) Mobile applications related to assessment of stuttering	15 Hour
Unit 3	Management and Recovery Related Issues of Fluency Disorders in Children and Adults a) Current evidenced based approaches to management of stuttering in pre-school, school-going, adolescents, and adults who stutter. b) Cognitive-behavior therapy for the management of stuttering in adolescents and adults who stutter. c) Management of other fluency disorders d) Tele-practice for delivery of intervention; use of technology and mobile apps in the management of stuttering. e) Group therapy and Counselling - including parents and teachers, Self-help and advocacy groups. f) Relapse and spontaneous recovery pattern in fluency disorders; Efficacy and outcome measures of fluency therapy; Ethics in research and management of stuttering	20 Hours
Unit 4	Prosody in Assessment and Management of Speech disorders	15 Hours

	a) Suprasegmental aspects of Speech (Rate, Rhythm, Intonation, Stress, Prosody) b) Acoustic aspects of prosody and its assessment, prosody in speech disorders c) Prosodic variations across languages, their uses and applications in supra normal use (such as public speaking, news reading, etc.) d) Management of prosody in stuttering and other speech disorders	
Practicum	1. Administer SSI 4 (Both Manual and Computerized), SPI & Fluency Tests 2. Measure Rate of Speech –WPM, SPM, SPS 3. Disfluency Assessment - Type, Percent, Naturalness Rating Scale 4. Assessment of Cognitive dimension in stuttering (Anxiety, Attitude , Quality of life) 5. Assessment of perspectives of parents, children who stutter and other significant persons 6. Assessment of Cluttering and Neurogenic Stuttering 7. Differential Diagnosis of Stuttering Vs Cluttering Vs Neurogenic Vs Psychogenic Stuttering 8. Instrumental Assessment: DAF, Vital Capacity, MAFR, F0, F0 Range, EGG 9. Demonstration of Therapy Techniques: • Prolonged Speech Techniques • Modified Airflow • Response Cost • Analogies • Other fluency shaping strategies	
References	Unit 1 • Bloodstein, O., & Ratner, N. B.(2021). A handbook on stuttering (7th Ed.). Clifton Park, NY: Thomson Demer Learning. • Conture, E.G. (2001). Stuttering: its nature, diagnosis and treatment. Boston, Allyn & Bacon. • Guitar, B. (2014). Stuttering-An integrated approach to its nature and treatment.4th Ed. Lippincott Williams and Wilkins, Baltimore. • Manning, W. H. (2025). Clinical decision making in Fluency disorders. 5th Ed.Delmer, Cengage learning. • St. Louis (1986). Atypical stuttering. Orlando: Academic Press. • Van Riper, C. (1982). Nature of stuttering. 2nd Ed. New Jersey: • Prentice HallInc. Yairi, E & Seery, C.H. (2015). Stuttering-Foundations and clinical applications 2nd Ed. Pearson Education, Inc, USA	

Unit 2

- Bloodstein, O., & Ratner, N. B.(2021). A handbook on stuttering (7th Ed.). Clifton Park, NY: Thomson Demer Learning..
- Bothe, A.K. (2004). Evidence-based treatment of stuttering. Mahwah, NJ: Earlebaum Associates Inc.
- Guitar, B. (2014). Stuttering-An integrated approach to its nature and treatment.4th Ed. Lippincott Williams and Wilkins, Baltimore.
- Manning, W. H. (2025). Clinical decision making in Fluency disorders. 5th Ed.Delmer, Cengage learning.
- Yairi, E & Seery, C.H. (2015). Stuttering-Foundations and clinical applications 2nd Ed. Pearson Education, Inc, USA.

Unit 3

- Bloodstein, O., & Ratner, N. B.(2021). A handbook on stuttering (7th Ed.). Clifton Park, NY: Thomson Demer Learning.
- Bothe, A.K. (2004). Evidence-based treatment of stuttering. Mahwah, NJ: Lawrence Earlebaum Assoc Inc.
- Guitar, B. (2014). Stuttering-An integrated approach to its nature and treatment.4th Ed. Lippincott Williams and Wilkins, Baltimore.
- Hegde, M.N., & Freed D. (2011). Assessment of communication disorders in adults. Chapter VII., Plural publishing, Oxford, Brisbane.
- Manning, W. H. (2025). Clinical decision making in Fluency disorders. 5th Ed.Delmer, Cengage learning.
- Yairi, E & Seery, C.H. (2015). Stuttering-Foundations and clinical applications 2nd Ed. Pearson Education, Inc, USA

Unit 4

- Guitar, B. (2014). Stuttering-An integrated approach to its nature and treatment.4th Ed. Lippincott Williams and Wilkins, Baltimore.
- Hegde, M.N., & Freed D. (2011). Assessment of communication disorders in adults. Chapter VII., Plural publishing, Oxford, Brisbane.
- Manning, W. H. (2025). Clinical decision making in Fluency disorders. 5th Ed.Delmer, Cengage learning.

	• Ward, D., & Scott, K.S. (2011) Cluttering: A handbook of research, intervention and education. Hove, UK,: Psychology Press. • Yairi, E & Seery, C.H. (2015). Stuttering-Foundations and clinical applications 2ndEd. Pearson Education, Inc, USA	
<u>Course: 3.2 (HC)</u> <u>Advances in Motor Speech Disorders</u>		
Objectives	After the completion of the course, the students will be able to a) explain the neuroanatomical and physiological correlates of speech motor control b) describe the changes in speech motor control across life span c) explain the models relevant to speech motor control d) apply principles of evidence-based practice in the assessment and management of motor speech disorders in children and adults	
Unit 1	Neuroanatomical and Physiological Substrates of Speech Motor Control 1.1 Neuroanatomical Substrates of Speech Motor Control a) Role of Motor and Sensory Cortex b) Role of Subcortical, Cerebellar and Brain Stem Structures and their Pathways c) Cranial Nerves and Peripheral Nervous System d) Types of Mechanoreceptors and their Topography in Speech 1.2 Speech Motor Control: Typical, Developmental & Degenerative a) Acquisition of Speech Motor Control in Typical Children b) Neural Substrates in the Maturation of Speech Motor Control – Prenatal to Postnatal c) Age related changes in speech motor control; role of neural substrates in maturation	16 hours
Unit 2	Models of Speech Motor Control 2.1 Terminologies and Concepts of Speech Motor Control: Motor Equivalence, Variability, Co-variability, Spatio Temporal Index, Trajectory, Normalized Curves etc. 2.2 Models of Speech Motor Control – their Relevance in Understanding Speech Motor Disorders a) Closed Loop, Open Loop, Associative Chain and Serial Order Model	

	b) Netsell model c) Mac Kay's Model d) Adaptive Model e) Gracco's Model f) Task Dynamic Model g) Schema Theory h) Van Der Merwe's Model i) DIVA model	
Unit 3	Assessment and Management of Dysarthria a) Perceptual methods: Rating scales and standardized tests for speech parameters, prosody, speech intelligibility, comprehensibility and naturalness. b) Recent advances in use of aerodynamic and acoustic and physiological analysis of speech among persons with dysarthria c) Specific treatment approaches for Dysarthria in Adults (e.g., Programmed subsystem approach) d) Differential diagnosis among types of dysarthria e) Methods to correct Posture, Tone, and Strength and Sensori-Motor Treatment Techniques in children with dysarthria f) Specific behavioral approaches in developmental dysarthria: McDonald's Approach and Hardy's Approach g) Application of facilitatory approaches (neurodevelopmental approach and methods for reflex inhibition) in the management of developmental dysarthria h) "For and Against" Schools of thought for Facilitatory Approaches i) Evidence based intervention approaches for dysarthria	
Unit 4	Assessment and Management of childhood apraxia of speech (CAS) and Apraxia of Speech (AOS) in Adults a) Current status of nature of CAS as primary disorder and CAS as co-morbid condition in other neurodevelopmental disorders b) Assessment for apraxia of speech in children and adults, and oral apraxia: Perceptual assessment protocols; c) Recent advances in use of acoustic and physiological analysis of speech among adults with apraxia	

	d) Differential diagnosis of CAS with other speech disorders and AOS with and Aphasia and dysarthrias e) Motor learning principles – applications in intervention of CAS/AOS f) Intervention for oral apraxia and AOS in adults: specific, programmed, and nonspecific approaches – g) Evidence based interventional approaches in CAS and AOS h) Telerehabilitation of motor speech disorders i) Right, privileges and disability certification of individuals with dysarthria and apraxia as per RPWD act 2016	
Practicum	1. Observe the subjective and objective procedures for assessment of persons with motor speech disorders 2. Assess atleast one child and one adult with motor speech disorder using suitable subjective &/ objective procedures 3. Prepare and submit a diagnostic and therapeutic report on any two individuals with motor speech disorders	
References	Unit 2 • Barlow, S. M. & Andreatta, R. D. (1999). Handbook of Clinical Speech Physiology, San Deigo, Singular Publishing Group Inc.. • Borden, G. J., Harris, K. S., & Raphael, L. J., (2003). Speech Science Primer: Physiology, Acoustics and Perception of Speech. (4th Edition). Philadelphia, Lippincott Williams & Wilkins. • Darby. J. K. (1989). Speech and Language Evaluation in Neurology: Childhood Disorders. Chapter 7. USA, Allyn & Bacon. • Grillner, P., Lindblom, J., & Persson, A. (1982). Speech Motor Control. Chapters 16, 17, 18 & 20. New York, Pergamon. • Guenther F. H., & Perkell, J. S. (2004). A Neural Model of Speech Production and its Application to Studies of the Role of Auditory Feedback in Speech. UK, Oxford University Press. • Hammond, G. R. (1990). Advances in Psychology: Cerebral Control of Speech and Limb Movements, Chapter 1 & 19. Amsterdam, North Holland, Elsevier. • Keller, E. & Gopnik, M. (1987). (Eds.). Motor and Sensory Processes of Language. Chapter 6, 7, 8 & 9. New Jersey, Lawrence Erlbaum Associates. • Kuehn, D. P., Lemme, M. L., & Baumgartner, J. M. (1989). Neural Bases of Speech, Hearing, and Language. University of Michigan, Little Brown.	

- Ferrand, C. T., (2007). Speech Science: An Integrated Approach to Theory and Clinical Practice. USA, Pearson Education, Inc.
- Maassen, B., Kent, R., Peters, H., Lieshout, P.V., & Hulstijn, W. (Eds.) (2009). Speech Motor Control in Normal and Disordered Speech. NY, Oxford University Press.
- Maassen, B., & Lieshout, P. V. (Eds.) (2010). Speech Motor Control: New Developments in Basic and Applied Research. NY, Oxford University Press.
- Netsell, R. (1986). A Neurobiological View of Speech Production and the Dysarthrias. San Diego, College Hill Press.
- Perkell, J. S., & Nelson, W.L. Sensorimotor Control of Speech Production: Models and Data. Cambridge, Massachusetts Institute of Technology.
- Peters, H. F. M., & Hulstijn, W. (1987). Speech Motor Dynamics in Stuttering. New York, Springer-Verlag.
- Peters, H. F. M., Hulstijn, W., & Starkweather, C.W. (1991). Speech Motor Control and Stuttering. Netherlands, Elsevier Science Publishers.
- Schenkman, M. L., Bowman, J. P., Gisbert, R. L., & Butler, R. B. (2013). Clinical Neuroscience for Rehabilitation, Chapter 23. Upper Saddle River, Pearson Education, Inc.

Unit 3

- Bahr, D. C., & Hillis, A. E. (2001). Oral Motor Assessment and Treatment: Ages and Stages. MA, Allyn & Bacon.
- Berry, W. R. (1983). Clinical Dysarthria. University of Michigan, College-Hill Press.
- Bickerstaff, E. R., & Spillane, J. A. (1996). Bickerstaff's Neurological Examination in Clinical Practice. Chapter 15, 16, 17, 18 & 19. Massuchsets, Wiley-Blackwell.
- Brandt, T., Caplan, L. R., Dichgans, J., Diener, H. C., & Kennard, C. (1996) (Eds.). Neurological Disorders – Course and Treatment. San Diego, Academic Press.
- Brookshire, R. H. (2007). Introduction to Neurogenic Communication Disorders. University Of Virginia, Mosby.
- Cannito, M. P., Yorkston, K. M., & Beukelman, D. R. (1998). Neuromotor Speech Disorders: Nature, Assessment, and Management. Virginia. Paul H. Brookes.
- Caruso. A. C., & Strand, E. A. (1999). Clinical Management of Motor Speech Disorders in Children. New York. Thieme.
- Crary. M. A. (1993). Developmental Motor Speech Disorders. San Diego, Singular Publishing Group.
- Darby, J. K. (1981). Speech Evaluation in Medicine. University Of Michigan, Grune & Stratton.

- | | |
|--|--|
| <ul style="list-style-type: none"> • Darby, J. K. (1981). Speech Evaluation in Psychiatry. University of Michigan, Grune & Stratton. • Darby, J. K. (1985). Speech and Language Evaluation in Neurology- Adult Disorders. University Of Michigan, Grune & Stratton. • Darby, J. K. (1989). Speech and Language Evaluation in Neurology: Childhood Disorders. USA, Allyn & Bacon. • Darley, F. L., Aronson, A. E., & Brown, J. R. (1975). Motor Speech Disorders. Philadelphia: W.B. Saunders. • Denhoff, M. D., & Robinault, P. (1960). Cerebral Palsy and Related Disorders: A Developmental Approach to Dysfunction. London, Mcgraw-Hill Book Company. • Dodd, B. (2005). Differential Diagnosis and Treatment of Children with Speech Disorders. London, Whurr Publishers. • Dubowitz, L. M. S., Dubowitz, V. & Mercuri, E. (1999). The Neurological Assessment of the Pre-Term and Term Newborn Infant. London, Cambridge University Press. • Dworkin, P. J. (1991). Motor Speech Disorders: A Treatment Guide. St. Louis: Mosby. • Dworkin, J. P., & Hartman, D. E. (1994). Cases in Neurogenic Communication Disorders: A Workbook. University of Michigan, Singular Publishing Group. • Edward, M. (1984). Disorders of Articulation: Aspects of Dysarthria and Verbal Dyspraxia. Vol.7. University of Michigan. Springer-Verlag. • Evans, O. B. (1987). Manual of Child Neurology. NY, Churchill Livingstone. • Feldman, R. G., Young, R. R., & Koella, W. P. (1980) (Eds.). Spasticity – Disordered Motor Control. London, Symposia Specialists Inc. • Ferrand, C. T., & Bloom, R. L. (1997). Introduction to Organic and Neurogenic Disorders of Communication: Current Scope of Practice. US, Allyn & Bacon. • Gillis, R. J., Mchenry, M., & Pierce, J. N. (1996). Traumatic Brain Injury Rehabilitation for Speech-Language Pathologists. University of Michigan. Butterworth-Heinemann. • Gravell, R., & France, J. (1991) (Eds.). Speech and Communication Problems in Psychiatry. London, Chapman & Hall, • Hardy, J. C. (1983). Cerebral Palsy. Englewood Cliffs. New Jersey, Prentice Hall. • Hall, P. K., Jordon, L. S., & Robin, D.A. (1993). Developmental Apraxia of Speech: Theory and Clinical Practice. Austin,; Texas, Pro-Ed Inc. • Halpern, H., & Goldfarb, R. (2013). Language and Motor Speech Disorders in Adults (3rd Ed.). Chapters 8 and 9. MA, Jones & Barlett Learning. | |
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|---|--|
| <ul style="list-style-type: none"> • Johnson, A. F., & Jacobson, B. H. (2007). Medical Speech-Language Pathology: A Practitioner's Guide. New York, NY, Thieme. • Langley, M. F B., & Lombardino, L. J. (1991). Neurodevelopmental Strategies for Managing Communication Disorders in Children with Severe Motor Dysfunction. University of Michigan, Pro-Ed Inc. • Lass, N. J. (1981). Speech and Language: Advances in Basic Research and Practice. Vol. 5, Chapter 1. NY, Academic Press Inc. • Lebrun, Y. (1997). From the Brain to the Mouth: Acquired Dysarthria and Dysfluency in Adults. Netherlands, Kluwer Academic Publishers. • Love, R. J. (2000). Childhood Motor Speech Disability (2nd Ed.). USA, Allyn & Bacon. • Manasco, M. H. (2014). Introduction to Neurogenic Communication Disorders. MA, Jones • McNeil, M. R. (2008). Clinical Management of Sensorimotor Speech Disorders (2nd Ed.). New York, NY, Thieme. • McNeil, M. R., Rosenbek, J. C., & Aronson, A. E. (1984). The Dysarthrias: Physiology, Acoustics, Perception and Management. San Diego, College-Hill Press. • Murdoch, B. E. (2010). Acquired Speech and Language Disorders: A Neuroanatomical and Functional Neurological Approach (2nd Ed.). New Delhi, India: John Wiley & Sons. • Netsell, R. (1986). A Neurobiological View of Speech Production and the Dysarthrias. University of Michigan, College-Hill Press. • Papathanasiou, I. (2000) (Eds.). Acquired Neurogenic Communication Disorders – A Clinical Perspective, Chapters 5, 6 & 7. London, Whurr Publishers. • Redstone, F. (2014). Effective SLP Interventions for Children with Cerebral Palsy: NDT/Traditional/Eclectic. San Diego, Plural Publishing Inc. • Scherzer, A. L. & Tcharnuter, I. (1990). Early Diagnosis and Therapy in Cerebral Palsy: A Primer on Infant Developmental Problems. University of Michigan, M. Dekker. • Stojanovik, V., & Setter, J. (2011). Speech Prosody in Atypical Population: Assessment and Remediation. Surry, UK, J & R Press Ltd. • Vogel, D. & Carter, J. E. (1995). The Effects of Drugs on Communication Disorders. University of Michigan, Singular Publishing Group. • Weismer, G. (2007). Motor Speech Disorders: Essays for Ray Kent. San Diego, Plural Publishing Inc. • Yassa, R., Nair, N. P. V., & Jeste, D. V. (1997) (Eds). Neuroleptic Induced Movement Disorders. USA, Cambridge University Press. | |
|---|--|

- Yorkston, K. M., Beukelman, D. R., Bell, K. R. (1998). Clinical Management of Dysarthric Speakers. Austin, Texas; Pro-Ed Inc.
- Yorkston, K. M., Beukelman, D. R., Strand, E. A., & Hakel, M. (2010). Management of Motor Speech Disorders in Children and Adults (3rd Ed.). Austin, Texas; Pro-Ed Inc.

Unit 4

- Goldenberg, G. (2013). Apraxia: The Cognitive Side of Motor Control. Oxford University Press, UK.
- Hall, P. K., Jordon, L. S., & Robin, D.A. (1993). Developmental Apraxia of Speech. Chapter 3. Austin; Texas, Pro-Ed Inc.
- Yorkston, K. M., Miller, R. M., & Strand, E. (1995). Management of Speech and Swallowing in Degenerative Diseases. Austin, Texas; Pro-Ed.
- Macintyre, C. (2001). Dyspraxia 5-11: A Practical Guide. London, David Fulton Publishers Ltd.
- Macintyre, C. (2000). Dyspraxia in the Early Years: Identifying and Supporting Children with Movement Difficulties. London, David Fulton Publishers Ltd.
- Portwood, M. (1999). Developmental Dyspraxia – Identification and Intervention: A Manual for Parents and Professionals (2nd Ed.). London. David Fulton Publishers.
- Portwood, M. (2000). Understanding Developmental Dyspraxia: A Textbook for Students and Professionals. London, David Fulton Publishers.
- Ripley, K. (2001). Inclusion for Children with Dyspraxia: A Hand Book for Teachers. London. David Fulton Publishers Ltd.
- Ripley, K., Daines, B., & Barrett, J. (1997). Dyspraxia: A Guide for Teachers and Parents. London, David Fulton Publishers Ltd.
- Rothi, L. J., Rothi, L. J. G., Heilman, K. M. (1997). Apraxia: The Neuropsychology of Action. United Kingdom, Taylor & Francis Ltd.
- Velleman, S. L. (2003). Resource Guide for Childhood Apraxia of Speech. Clifton Park, NY, Delmar/Thomson Learning.
- Wertz, Lapointe & Rosenbek (1999). Apraxia of Speech in Adults: Disorders and its Management. NCVS Status Report.

<u>Aphasia</u>		
Objectives	After completing this course, the student will be able to: - Describe the resulting neuroanatomical substrates following aphasia. - Identify and assess both linguistic and non-linguistic impairments in persons with aphasia - Manage linguistic as well as non-linguistic impairments in persons with aphasia - Apply principles of evidence based practice in their clinical work with persons with aphasia	
Unit 1	Neuroanatomical Basis and Impairments in Aphasia - Neuroanatomical Basis of Major Aphasia Types, Key Brain Regions, Aphasia Case Studies –Lesion-Deficit Relationships, Reinterpretation and Reclassification of Aphasic Syndromes: - Neural Basis of Semantic Processing: - Evidence from Patients- Organization of Semantic Memory, Category-Specific Semantic Disorders, Sensory-Functional Theory, Domain-Dependent Theory, Semantic Processing in Aphasia - Evidence from EEG- N400, Lexical Characteristics Affecting the N400, Lexicality, - Vocabulary Class, Word Frequency, Concreteness, Neural Basis of the N 400 - Neural Basis of Sentence Comprehension: Evidence from Patients, Neuroimaging - Neural Basis of Reading & Writing - Neural Basis of Bilingualism and L2 Acquisition- Bilingualism, L2 Acquisition Theories, Neural Representation of L2 –Syntactic Processing –Phonological Processing –Lexical- Semantic Processing, Neural Control of Two Languages	
Unit 2	Linguistic Deficits in Aphasia - Phonological Aspects of Aphasia - Sound Structure of Language: A Theoretical Framework - Speech Production - Speech Perception - Lexical Deficits In Aphasia - Functional Architecture of the Lexical System - Aspects of the Internal Structure of the Functional Components - Syntactic Deficits in Aphasia - Sentence Production: Conceptions of Normal Production - Models to Understand Syntactic Deficits in Aphasia	

	• Sentence Comprehension: A Framework for Normal Comprehension, Sentence Comprehension Impairment in Aphasia	
Unit 3	Assessment in Aphasia a) Formal and informal assessment tools both Indian and western their logic, purpose, test constructs, rationale, scoring, procedures and interpretation. b) Do's and don'ts in assessment procedures. c) Formal Assessment Tools Indian and Western Versions - WAB, RTT, LPT, ABA, BDAE, PICA, Bedside Assessment, – their Rationale, Scoring and Interpretation d) Methods for studying language and the brain- neuroimaging and cortical potentials electroencephalography, magnetoencephalography, positron emission tomography, functional magnetic resonance imaging, N400 and T-complex e) Differential diagnosis of different types of aphasia	
Unit 4	Recovery and management in Aphasia a) Plasticity and Recovery in Aphasia b) Prognostic Factors of Recovery c) Spontaneous recovery in Aphasia- Structural mechanisms; behavioral mechanisms and language recovery in brain d) Recovery pattern in monolingual, bi/multilingual aphasia e) Principles of Language Intervention- Research Principles for Clinicians, Delivering Language Intervention Services f) Psychosocial/Functional Approaches to Intervention –Life Participation Approach to Aphasia, Social Approaches to Aphasia g) Traditional Approaches to Language Intervention – Schuell's Stimulation Approach, Thematic Language Simulation Approach, Context Based Approach. h) Specialised Approach to Language Intervention- MIT, Language Oriented Treatment, PACE, VAT, HELPSS, VCIU, Manual for Adult Aphasia Therapy (MAAT) in Indian Context, Computer Applications in the Treatment of Aphasia i) Rehabilitation of Sub-Cortical Aphasia j) Quality of Life Approach to Aphasia	

	k) AAC in the intervention of aphasia l) Tele-Rehabilitation in Persons with Aphasia. m) Rights of Persons with Aphasia n) Medicolegal aspects in Aphasia	
Practicum	Learn to: a) Use Taxonomy and Classify Different Types of Aphasias b) Different Proformae used in the Assessment of Persons with Aphasia c) Independently Carry Out the Bedside Evaluation, Formal and Informal Assessment of Persons with Aphasia d) Administer, Interpret, Score and Diagnose Persons with Aphasia Using WAB and BDAE, LPT, RTT, PICA e) Use Different Language Intervention Approaches used in the Treatment of Aphasia f) Use Manual for Adult Aphasia Therapy g) Carry out Individual and Group Therapy h) Prepare a Diagnostic Report of Persons with Aphasia for - i) Referral j) Employers Of PWA k) Medico-Legal l) Counsel the PWA and their Family Members m) Set up Adult Aphasia Rehabilitation Center n) Assess and Treat the Co-Morbid Deficits in Persons with Aphasia o) Develop a Network of Professionals at District, State, National and International Levels	
References	Unit 1 • Ardila, A. (2010). A Proposed Reinterpretation and Reclassification of Aphasic Syndromes. Aphasiology, 24 (3), 363–394.	

	• Ball, M. J., & Damico, J. S. (2014). <i>Clinical Aphasiology</i>. Hove, UK: Psychology Press. • Code, C. (2013). Significant Landmarks in the History of Aphasia and its Therapy. In I. Papathanasiou, P. Coppens, & C. Potagas (Eds.), <i>Aphasia and Related Neurogenic Communication Disorders</i>. (Pp. 3-22). Burlington: Jones & Bartlett. • Coppens, P. (2022). <i>Aphasia and related neurogenic communication disorders</i>. Jones & Bartlett Publishers. • Coppens, P., & Patterson, J. L. (Eds.). (2018). <i>Aphasia rehabilitation: Clinical challenges</i>. Jones & Bartlett Learning. • Davis, G.A. (2007). <i>Aphasiology - Disorders and Clinical Practice</i>. Boston. Pearson & Allyn & Bacon. • Duffy, R. J., Mcneil, R. M. (2008). Primary Progressive Aphasia and Apraxia. In Chapey, R. (4th Eds). <i>Language Intervention Strategies In Aphasia and Related Neurogenic Communication Disorders</i> (Pp 543-563). Philadelphia, Lippincott Williams & Wilkins. • Hallowell, B. (2023). Aphasia and other acquired neurogenic language disorders. <i>San Di-ego: Plural Publusing, 201(7)</i>. • Hegde, M. N. (2018). <i>Hegde's Pocketguide to treatment in speech-language pathology</i>. Plural Publishing. • Hoepner, J. K., & Blake, M. L. (2023). <i>Acquired Neurogenic Communication Disorders: An Integrated Clinical Approach</i>. Plural Publishing. • Holmgren, E. & Rudkilde, E. S. (2013). <i>Aphasia: classification, management practices, and Prognosis</i>. New York: Nova Sciences Publishing. • Kraemer, R. & Bryla, J (2018). <i>Clinical Workbook for Speech-Language Pathology</i>. Plural Publishing. • LaPointe, L. L. (2018). Aphasia and related neurogenic language disorders. (<i>No Title</i>). • Laura, L. M., & Heather, M. C. (2006). <i>Neurogenic Disorders of Language: Theory Driven Clinical Practice</i>. New York, Thomson Delmar Learning. • Papathanasiou, P. Coppens, & C. Potagas (2013), <i>Aphasia and Related Neurogenic Communication Disorders</i>. Burlington, Jones & Bartlett. • Petrides, M. (2014). <i>Neuroanatomy of language regions of the human brain</i>. UK: Elsevier. • Unit 2 • Alexander, M. P. (2006). Aphasia I: Clinical And Anatomical Issues. In M. J. Farah & T.E. Feinberg (Eds.). <i>Patient-Based Approaches to Cognitive Neuroscience</i>. (Pp. 181-198). Cambridge: MIT Press. • Berndt, S.R. (1998). Sentence Processing in Aphasia. In Sarno, T.M (3rd Eds). <i>Acquired Aphasia</i>. (Pp 238-258). San Diego: Academic Press. • Blumstein, S.E. (1998). Phonological Aspects Of Aphasia. In Sarno, T.M (3rd Eds). <i>Acquired Aphasia</i> (Pp 157-180). San Diego: Academic Press.	
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	• Blumstein, S.E. (2007). Word Recognition in Aphasia. In M.G. Gaskell (Ed.), Oxford Handbook Of Psycholinguistics (Pp. 141-158). Oxford: Oxford University Press. • Bookheimer, S. (2002). Functional MRI of Language: New Approaches To Understanding the Cortical Organization of Semantic Processing. Annual Review of Neuroscience, 25, 155-188. • Caplan, D., & Waters, G. (2006). Comprehension Disorders In Aphasia: The Case Of Sentences That Require Syntactic Analysis. In M. Traxler & M.A. Gernsbacher (Eds.), The Handbook Of Psycholinguistics. (Pp. 939-966). Holland: Elsevier. • Caramazza, A., & Rapp, C. R. (1998). Lexical Deficits. In Sarno, T.M (3rd Eds). Acquired Aphasia (Pp 187-222). San Diego: Academic Press. • Chop, C. W &Robnett, H. R (2015.). Gerontology for health care professional.MA: Jones and Bartlett Learning Burlington. • Indefrey, P. (2012). Hemodynamic Studies of Syntactic Processing. In M. Faust (Ed.), The Handbook of the Neuropsychology of Language (Pp. 209-228). Oxford: Blackwell. • Ingram, J.C.L. (2007). Lexical Semantic Disorders In Aphasia. In J.C.L. Ingram. Neurolinguistics: An Introduction to Spoken Language Processing and its Disorders (Pp. 221-239). Cambridge: Cambridge University Press. • Kutas, M., Van Petten, C. K., & Kluender, R. (2006). Psycholinguistics Electrified II (1994-2005). In M. Traxler & M.A. Gernsbacher (Eds.), The Handbook of Psycholinguistics (Pp. 659- 724). Holland: Elsevier. • Kutas, M., Van Petten, C.K., & Kluender, R. (2006). Psycholinguistics Electrified II (1994-2005). In M. Traxler & M.A. Gernsbacher (Eds.), The Handbook of Psycholinguistics (Pp. 659- 724). Holland: Elsevier. 690-708. • Morris, J. C. (1994). Handbook of Dementic Illnesses. NY, Marcel Dekker Inc. • Murray, L.L. & Clark, M.H (2015).Neuro-genic Disorders of Language and cognition. Austin, Texas, Pro-Ed Inc. • Scott, S.K. (2012). Neural Basis of Speech Perception: Phonology, Streams, and Auditory Word Forms. In M. Spivey, K. Mcrae, & M. Joanisse (Eds.). The Cambridge Handbook Of Psycholinguistics (Pp. 26-41). Cambridge: Cambridge University Press. • Ward, J. (2010). Introducing The Brain. In J. Ward. The Student's Guide To Cognitive Neuroscience. (Pp. 16-31). New York: Psychology Press. • Ward, J. (2010). The Literate Brain. In J. Ward. The Student's Guide To Cognitive Neuroscience (Pp. 260-287). New York: Psychology Press.	
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Unit 3

- Ansaldo, A., Coppens, P. & Murray, L. (2013). Plasticity and Recovery in Aphasia. In Papathanasiou, I., Coppens, P., & Potagas, C. (Eds.) Aphasia and Related Neurogenic Communication Disorders. (pp 49-63). Burlington, Jones and Bartlett Learning.
- Chahey, R. (2008). Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders. Philadelphia, Lippincott Williams & Wilkins.
- Coppens, P. & Murray, L. (2013). Formal and Informal Assessment in Aphasia. In Papathanasiou, I., Coppens, P., & Potagas, C. (Eds.) Aphasia and Related Neurogenic Communication Disorders. (pp 67-82). Burlington, Jones & Bartlett Learning.
- Gazzaniga, S., Ivry, M. S., Mangun, R. B., & George, R. (2014). Cognitive Neuroscience: The Biology of the Mind. New York, W. W. Norton & Company Inc.
- Hickok, G., Bellugi, U., & Klima, E.S. (2001). Sign Language in the Brain. Scientific American, 284, 58-65.
- MacSweeney, M., Capek, C.M., Campbell, R., & Woll, B. (2008). The Signing Brain: The Neurobiology of Sign Language. Trends in Cognitive Sciences. 12, 432-440.
- Ward, J. (2010). The Electrophysiological Brain. In J. Ward, The Student's Guide to Cognitive Neuroscience (pp. 32-47). New York: Psychology Press.
- Ward, J. (2010). The Imaged Brain. In J. Ward. The Student's Guide to Cognitive Neuroscience (pp. 48-77). New York: Psychology Press.
- Ward, J. (2010). The Lesioned Brain. In J. Ward. The Student's Guide to Cognitive Neuroscience (pp. 78-101). New York: Psychology Press.

Unit 4

- Chahey, R. & Hallowell, B. (2008). Introduction to Language Intervention Strategies. In Chahey, R. (4th Eds). Language Intervention strategies in aphasia and related neurogenic communication disorders (pp 3-20). Philadelphia: Lippincott Williams and Wilkins
- Duffy, R. J., Sinotte, P. M., & Coelho, A. C. (2008). Traditional Approaches to Language Intervention in Chahey, R. (4th Eds). Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders (pp 403-450) & 814-852. Philadelphia: Lippincott Williams & Wilkins
- Goswami, S. P., Shanbal, J. C., Samasthitha S., Navitha U., Chaitra S. & Ranjini M. (2011). Manual for Adult Aphasia Therapy in Kannada (MAAT-K). The publication of All India Institute of Speech and Hearing, Mysore.

	ISBN No. 978-93-81-854-17-0 • Sharp, L.V., Scott. A., Tompkins A. R. (2008). Principles of Language Intervention. In Chapey, R .(4th Eds). Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders. (pp 186-229). Philadelphia: Lippincott Williams & Wilkins. • Simmons-Mackie, N. (2008). Social Approaches to Aphasia in Chapey, R.(4th Eds). Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders. (pp 279-290). Philadelphia: Lippincott Williams & Wilkins. Journals to be referred: 1. Aphasiology 2. Journal of Speech- Language and Hearing Research 3. Brain and Language 4. Stroke Rehabilitation 5. Cortex 6. Journal of All India Institute of Speech and hearing 7. Journal of Indian Speech and Hearing Association	
	<u>Course: 3.4 (HC)</u> <u>Genetics of Speech-language</u>	
Objectives	After completing this course, the student will be able to • Understand the genetic processes underlying Speech-language and apply the same in the practice of speech-language pathology • Explain the genetic aberrations of speech-language disorders • Have a theoretical knowledge of methods in genetic assessment • Describe the different genetic disorders/syndromes associated with speech-language disorders • Advice caregivers on the management of genetically base deviant speech-language conditions in terms of gene therapy and genetic counselling.	
Unit 1	Basic Concepts and Terminologies in Genetics	08 Hours

	(a) Principles of Genetics and patterns of inheritance: Introduction to genetics (Human Chromosome, Cytogenetics, Mitosis and Meiosis, Numerical aberrations, structural aberrations, sex chromosome analysis, Genes). (b) Mendelian, Non-Mendelian inheritance, penetrance and expressivity – Multifactorial (role of environmental exposure, in-utero exposure, genetic interactions influencing fetus, cultural experience, stochastic variations in genetic expression). (c) Introduction to pedigree construction and analysis of pedigree. (d) Ethical, Social and Legal considerations.	
Unit 2	Genetic Testing and Analysis (a) Identification of genetic components: Twin studies, family studies and segregational analysis (b) Identification of loci and genes: Protein approaches, positional approach, candidate gene approach, association studies, animal models in genomic research, verification of analysis. (c) Basic and advanced methods in genetics: Cloning, molecular genetics, epigenetics, genetic variation and heritability estimation. (d) Laboratory techniques – DNA extraction, PCR, Sanger Sequence, NGS, Human Genome Mapping Project (HGMP)	08 Hours
Unit 3	Genetic aspects of Communication Disorders (a) An overview of various genetic conditions leading to communication disorders. (b) Craniofacial anomalies and clefting (c) Genetic language disorders – SLI, Specific reading disability, stuttering, language disorders due to genetic dispositions in children and elderly people.	08 Hours

	(d) Ear development, malformation and genetics of hearing impairment.	
Unit 4	Management of Genetic disorders (a) Accurate diagnosis, knowledge of biochemical basis of the disorder and early intervention. (b) Counselling clients/parents regarding genetics in speech, Special problems in genetic counselling (consanguinity, adaptation and genetic disorders, disputed paternity) (c) Amniocentesis, ultrasonography, genetic heterogeneity and etiologic heterogeneity. (d) Gene Therapy, Stem Cell therapy and new techniques for genetic control.	06 Hours
Reference	Common References • Cremers, CWRJ & Smith R (Eds.) (2002). Genetic hearing impairment: Its clinical presentations (vol.61). Karger Medical and Scientific Publishers. • Gangane, SD (2021), Human Genetics (6th ed.) India: Elsevier. • Gardner, E. J., Simmons, M.J. and Snustad, D.P. 1991. Principles of Genetics. New York, John Willey & Sons. • Gerber (2001). Handbook of Genetics and Communicative Disorders. San Diego: Elsevier Science & Technology Books. • Golper, LAC, Klaben BK, Miller, CK (2018). Medical Speech-Language Pathology: A Desk Reference, 4th Edition. United States: Plural Publishing, Incorporated. • Griggs, R. C., & Handler, A. R. (2005). Molecular genetics of neurological disease. Oxford University Press. • Haynes, W. O., & Butler, C. A. (Eds.). (2017). Developmental speech and language disorders: From theory to practice. Pearson.	

	• Jones, SM & Jones TA (2011). Genetics , Embryology, and Development of Auditory and Vestibular Systems. Plural Publishing. • Jung JH (2010). Genetic syndromes in Communication Disorders (2nd ed.) Pennsylvania State University: Pro Ed. • Leblanc, EM (2012). Need Analysis of Genetics and Genomics in Communication Sciences and its Disorders: Evidence for Change. United States: Columbia University. • Lewis, R. 2003. Human Genetics: Concepts and Applications 5th edition. Boston, WCB McGraw Hill. • Mange, E. J. and Mange, A. P. 1994. Basic Human Genetics. Sunderland; MA. Sinauer Associates. • McKinney, J. L., & Kimbrough, D. A. (Eds.). (2006). The handbook of child language disorders. Lawrence Erlbaum Associates. • Oller, D. K., & Healy, R. C. (2013). Speech and language disorders in children: A guide for the teacher and clinician (5th ed.). Allyn & Bacon. • Ratner, N. B., & Asher, R. P. (2015). Genetics for speech-language pathologists and audiologists (2nd ed.). Pearson Education. • Robin, NH (2008). Medical Genetics: Its application to Speech, hearing and Craniofacial disorders. Plural Publishing. • Shrpintzen RJ (1997). Genetics, Syndrome and Communication Disorders. New York: Singular Publishing Group Inc. • Shrpintzen RJ (2000). Syndrome Identification for Speech-Language Pathologists: An Illustrated pocket Guide. United Sates: Singular Publishing Group.	
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	• Stern, C. 1960. Principles of Human Genetics. San Francisco and London; Freeman and Company. • Strickberger, M. W. 2003. Genetics 3rd edition. New Delhi, Prentice Hall. • Toriello HV & Smith SD (2013). Hereditary Hearing Loss and Its Syndromes. United Kingdom: Oxford University Press. • Whittinghill, M. 1965. Human Genetics and Its Foundations. Calcutta, New Delhi, Oxford and IBH Publishing Company. • Willems PJ (2004). Genetic Hearing Loss. USA: Marcel Dekker Inc.	
<u>Course: 3.5 (HC)</u> <u>Clinicals in SLP</u>		
	General Consideration a) Post-graduates (PG) must complete the clinical practicum during rotations in clinics. The clinical rotations will provide focused exposure on clinical practice with specific populations (listed below) with communication and swallowing disorders across the lifespan. b) The thrust areas in PG clinics shall be clinical practice with: • children and adults with fluency disorders via in person and tele-mode • children and adults with motor speech disorders via in person and tele-mode • adults with aphasia via in person and tele-mode c) PGs must be exposed to advanced methodologies (use of gadgets and tools), varied service delivery systems (individual, group, camp based, and tele/mobile based), and evidence- based practices in assessment and management of communication and swallowing disorders. Care must be taken to facilitate clinical exposure and training in addition to those focused in the undergraduate program.	

	d) An additional emphasis should be on facilitating interaction with professionals in transdisciplinary management team (medical and non-medical).	
Objectives	At the end of clinical postings, the students should be able to a) carry out complete and appropriate speech, and language evaluation, counsel and manage persons with communication disorders. b) apply, show (in a clinical diary/log book), and perform the following on patients/clients. The below mentioned items in ‘Knowhow, demonstrate and do’ are specifics related to clinical performance in the current semester. These are over and above listed above in point (b) of general considerations in clinicals	
	<u>Know How:</u> Disorders of Fluency and Prosody: 1 Differential diagnosis of fluency disorders 2 Use of mobile apps for assessment and management of fluency disorders in adults and children Advances in Motor Speech Disorders: 1 Differential diagnosis of motor speech disorders 2 Observe, correlate and document reports of persons with motor speech disorders in tests such as EEG, CT scan, MRI etc with the clinical manifestations. 3 Rights and privileges of persons with Dysarthria and Apraxia under RPWD act, 2016 and certification procedures for persons with Dysarthria and Apraxia 4 Scope of practice of different medical and rehabilitation professionals in transdisciplinary team Aphasia: Observe and identify reports of persons with neurogenic communication disorders in tests such as EEG, CT Scan, MRI etc. <u>Show/Demonstrate:</u>	

Disorders of Fluency and Prosody:

- 1 Assessment of fluency disorders – in-person and tele-practice
- 2 Process of differential diagnosis for persons with fluency.
- 3 Therapy techniques for persons with fluency - in-person and tele-practice

Advances in Motor Speech Disorders:

- 1 Assessment of Dysarthria and Apraxia of Speech – in-person and tele-practice
- 2 Process of differential diagnosis for persons with motor speech disorders.
- 3 Therapy techniques for persons with motor speech disorders - in-person and tele-practice

Aphasia:

1. Conduct assessment and management for persons with aphasia using tele-practice
2. Prepare a report for persons with adult language disorders for medico- legal purposes
3. Demonstration of therapy techniques for aphasia.

Do:**Disorders of Fluency and Prosody:**

1. Perform evaluation, write detailed report, counsel persons and their families as required for the following:
 - Persons with stuttering using standardized tests (SSI, SPI, OASES, UTBAS etc.), including assessment of rate of speech, type, percent of dysfluencies, naturalness and quality of life measures.
2. Plan and carry out appropriate intervention program (short term, long term and home training) for children and adults with fluency

Advances in Motor Speech Disorders:

1. Perform evaluation, write detailed report, counsel persons and their families as required for the following:
 - Bedside screening, diagnostic evaluation of dysarthria and apraxia of speech
 - Perceptual evaluation of speech subsystems, and speech intelligibility assessment
 - Instrumental assessments of speech subsystems (respiration, voice, resonance and articulation) and quality

	of life assessment 2. Plan and carry out appropriate intervention program (short term, long term and home training) for children and adults with motor speech disorders. 3. Prepare a report for persons with Dysarthria and Apraxia of Speech for medico-legal purposes Aphasia: 1. Carry out complete evaluation, write detailed evaluation report, counsel persons with aphasia and their families with reference to the following: Three persons with aphasia using appropriate screening, diagnostic (WAB/ BDAE etc.) and performance tool. 2. Should administer the following test, maintain the documents for the same (at least 2 clients for each test): • Western Aphasia Battery (WAB) • Bilingual aphasia test (BAT) • Hundred picture naming test (HPNT) 3. Complete evaluation, write detailed evaluation report, counsel persons with aphasia and their families as required for the following: Persons with neuro/motor speech disorders at bed side. 4. Plan and carry out intervention program for persons with aphasia 5. Plan and carry out AAC intervention program for persons with aphasia <u>Evaluation:</u> a) Internal Assessment: A continuous formative assessment will be done by the faculty/clinical staff based on clinical activities of the student throughout the semester Examination at the end of the semester will include work with the clinical population, spot test, OSCE, records, viva-voce.	
<u>Course: 4.1 (HC)</u> <u>Augmentative and Alternative Communication</u>		
Objectives	After completing this course, the student will be able to: a) Identify and classify the different systems of augmentative and alternative communication (AAC)	

	b) Decide on approaches and methods for recommending AAC c) Assess individuals with complex communication needs and select appropriate AAC strategies for them d) Use evidence-based rationale for selecting management strategies with AAC, e) Select appropriate technology in the Indian context, and identify issues for research	
Unit 1	Types, Classification and Description of AAC a) Definition, history, need and classification of AAC b) Types of AAC i. Unaided systems and symbols in AAC: different types and their details ii. Aided systems and symbols in AAC: different types and their details - o Communication boards: types and decision making - o Technology in AAC: Low, mid and high-tech aids & devices: types, interfaces, selection and decision making	
Unit 2	Assessment for AAC a) Team Approach in AAC: Importance of team approach, Types, Team Members and their Roles b) AAC Assessment: Models, Standard Tests and Scales c) Assessment of Abilities in the following Domains: • Physical/ Motor and Seating Requirements • Cognition • Vision & Hearing • Sensory Perception d) Selection of Vocabulary and Symbol Representation of the Vocabulary: • Types of Vocabulary • Factors Affecting Choice of Vocabulary	
Unit 3	AAC Intervention: Principles and Procedures a) General principles and strategies in aided AAC and unaided AAC b) Strategies for selection of symbols in AAC, their types and factors affecting decision making: direct selection, scanning, encoding, word prediction	

	c) Specific intervention strategies for children with complex communication needs: Intellectual Disability, cerebral palsy, other child language disorders and children with dual and multiple disabilities. d) Specific intervention strategies for adults with complex communication needs: • Temporary conditions: laryngectomy, voice disorders • Degenerative and non-degenerative conditions, aphasia, TBI • Structural disorders and disorders affecting speech intelligibility e) Tele-assessment and Tele-rehabilitation in AAC	
Unit 4	Contemporary Issues and Evidenced Based Practices in AAC a) Adaptation of AAC in different set ups: home, schools, work place, and other social situations b) Training in the use and application of AAC for parents and caregivers c) Current status of AAC in India and scope for research d) Evidence based practices and outcome measures in AAC	
Practicum	a) Fabricate a Communication Board and Communication Book. Adapt the Same for use with a Client. b) Practice and Learn to use the Strategies of Direct Selection, Scanning, Encoding and Word Prediction in Simulated Situation and / or on a Client. c) Practice and Learn to use the Following Aided Symbols: • Blissymbols • Rebus • PECS d) Practice and Learn to use the Following Combined Symbol: • Cued Speech e) Practice and Learn to use the following in ASL, BSL and ISL Sign Languages: • Finger Spelling • Basic Vocabulary for Few Lexical Categories Such as Family and Siblings, Household Articles, Flowers, Animals, Birds, Numbers Etc. f) Learn to Operate the AAC Devices and Aids (Hardware and Software)	
References	Unit 1:	

	• Acredolo, L., & Goodwyn, S. (1996). Baby Signs: How to Talk to your Baby before your Baby can talk. Chicago, NTB/Contemporary. • Battison, R. (1978). Lexical Borrowing in American Sign Language. Maryland, Linstok Press Inc. • Beukelman, D. R., Mirenda, P., & Paul, H. (1998). Augmentative and Alternative Communication – Management of Severe Communication Disorders in Children and Adults. Baltimore: Brookes Publishing Co. • Bornstein, H., Saulnier, K.L (1987). The Signed English Schoolbook. Washington, DC: Kendall Green Publication. • Bryant, D.P., & Bryant, B. R. (2012). Assistive Technology for People with Disabilities. Boston, Pearson Education Inc. • Enderby, P. (1987). Assistive Communication Aids – for the Speech Impaired. UK, Churchill Livingstone. • Friedman, L. A. (1997). On the Other Hand – New Perspectives on American Sign Language. New York: Academic Press Inc. • Frost, L. A., & Bondy, A. S. (1994). PECS, The Picture Exchange Communication System: Training Manual. Cherry Hill, NJ: Pyramid Educational Consultants Inc. • Glennan, S., & Decoste, D. (1997). The Handbook of Augmentative and Alternative Communication. San Diego, CA: Singular Publishing Group. • Humphries, T., & Padden, C. (1992). Learning American Sign Language. New Jersey, Prentice-Hall Inc. • Kiernan, C., Reid, B., & Jones, L. (1982). Signs and Symbols – Use of Non-Vocal Communication Systems. London, Heinemann Educational Books. • King, T.W. (1999). Assistive Technology: Essential Human Factors. Boston, MA: Allyn & Bacon • .Kylel, J. G., & Well, B. (1985). Sign Language – The Study of Deaf People and their Language. Cambridge: Cambridge University Press. • Lloyd, L. L., Fuller, D.R., & Arvidson, H. H. (1997). Augmentative and Alternative Communication – A Handbook of Principles and Practices., Massachusetts, Allyn & Bacon. • Loncke, F. (2014). Augmentative and Alternative Communication: Models and Applications for Educators, Speech-Language Pathologists, Psychologists, Caregivers, and Users. San Diego, Plural Publishing Inc. • Loncke, P. (2022). Augmentative and Alternative Communication: Models and Applications, 2nd Ed. San Diego, CA : Plural Publishing, Inc. • Loncke, F. T., Clibbens, J., Arvidson, H. H., & Lloyd, L. L. (1999). Augmentative and Alternative Communication- New Directions in Research and Practice. Whurr Publishers, London.	
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	• Mani, M.N.G., Gopalkrishnan, V., & Amaresh, G. (2001). Indian Sign Language Dictionary. Germany, CBM International. • Mc. Donald, E. T. (1980). Teaching and Using Blissymbols. Canada, The Blissymbols Communication Institute. • Pain, H., Mclellan, L., & Gore, S.(2003). Choosing Assistive Devices – A Guide for Users and Professionals. London, Jessica Kingsley Publishers. • Quist, R.N., Lloyd, L.L, & Arvidson, H.H. (2010). Assistive Technology: Principle and Application for Communication Disorders and Special Education. Baltimore, Paul.H.Brookes Publishing Company. • Rowland, C., & Schweigert, P. (1990). Tangible Symbol System – Symbolic Communication for Individuals with Multisensory Impairment. Arizona, Communication Skill Builder. • Schlesinger, I. M., & Namir, I. (1978). Sign Language of the Deaf – Psychological, Linguistic and Sociological Perspectives. New York. Academic Press Inc. • Silverman, F. H. (1980). Communication for the Speechless – An Introduction to Nonvocal Communication Systems for the Severely Communicatively Handicapped. Englewood Cliffs, N. J, Prentice-Hall Inc. • Silverman, H., Mc Naughton, S., & Kates, B. (1978). Handbook of Blissymbols. Canada: The Blissymbols Communication Institute. • Tennant, R.A., & Brown, M.G. (1998). The American Sign Language Handshape Dictionary. San Diego, CA: Sign Enhancers, Inc. • Tetzchner, S. V., & Jensen, M. H. (1996). Augmentative and Alternative Communication: European Perspectives. London, Whurr Publishers Ltd. • Tetzchner, S. V., & Martinsen, H.(1992). Introduction to Sign Teaching and the Use of Communication Aids. London, Whurr Publishers Ltd. • Vasishta, M., Woodward, J., & Desantu, S. (1980). An Introduction to Indian Sign Language. New Delhi: All India Federation of the Deaf. • Vasishta, M., Woodward, J., & Desantu, S. (1980). An Introduction to Indian Sign Language. Kolkata: All India Federation of the Deaf. • Vasishta, M., Woodward, J., & Desantu, S. (1980). An Introduction to Indian Sign Language. Mumbai: All India Federation of the Deaf. • Walker, M., Lal, R., Ghate, R., & Dasija, M. (1992). Makaton Vocabulary – Indian Version. Makaton India and the Association for the Welfare of Persons with a Mental Handicap, Mumbai.	
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- Webster, J. G., Cook, A. M., Tompkins, W. J. & Vanderheiden, G. C. (1985). Electronic Devices for Rehabilitation. London, Chapman & Hall Ltd.
- Wilbur, R. B. (1987). American Sign Language. San Diego, College Hill Press.

Unit 2

- Alant, E. (2017). Augmentative and Alternative Communication: Engagement and Participation. San Diego, CA : Plural Publishing, Inc.
- Alant, E., & Lloyd. L. L. (2005). Augmentative and Alternative Communication and Severe Disabilities – Beyond Poverty. London, Whurr Publishers Ltd.
- Baumgart, D., Johnson, J., & Helmtetter, E. (1990). Augmentative and Alternative Communication System for Persons with Moderate and Severe Disabilities. Baltimore, MD: Paul.H.Brookes Publishing Company.
- Beukelman, D. R., Mirenda, P., & Paul, H. (1998). Augmentative and Alternative Communication – Management of Severe Communication Disorders in Children and Adults. Baltimore, Brookes Publishing Co.
- Cockerill, H., & Carroll'Few, L. (2001). Communicating without Speech: Practical Augmentative and Alternative Communication. London, Mac Keith Press.
- Cockerill, H., & Carroll-Few, L. (2010). Communicating without Speech: Practical Augmentative and Alternative Communication for Children (Clinics In Developmental Medicine). Baltimore, MD: Paul.H.Brookes Publishing Company.
- Dodd, J. L. (2017). Augmentative and Alternative Communication Intervention: An Intensive, Immersive, Socially Based Service Delivery Model. San Diego, CA 92123 : Plural Publishing, Inc.
- Dunn, M. L., (1982). Pre-Sign Language Motor Skills: Skill Starters for Motor Development. Tucson, AZ: Communication Skill Builders.
- Enderby, P. (1987). Assistive Communication Aids – for the Speech Impaired. UK, Churchill Livingstone.
- Glennan, S., & Decoste, D. (1997). The Handbook of Augmentative and Alternative Communication. San Diego, CA: Singular Publishing Group.
- Light, J. C., Beukelman, D. R., & Reichle, J. (2003) (Ed). Communicative Competence for Individuals who use AAC – From Research to Effective Practice. Baltimore, Paul H. Brookes Publishing Ltd.
- Lloyd, L. L., Fuller, D.R., & Arvidson, H. H.(1997). Augmentative and Alternative Communication – A Handbook of Principles and Practices., Massachusetts, Allyn & Bacon.

	• Loncke, F. (2014). Augmentative and Alternative Communication: Models and Applications for Educators, Speech-Language Pathologists, Psychologists, Caregivers, and users. San Diego, Plural Publishing Inc. • Loncke, F. T., Clibbens, J., Arvidson, H. H., & Lloyd, L. L. (1999). Augmentative and Alternative Communication- New Directions in Research and Practice. London, Whurr Publishers. • Pain, H., Mclellan, L., & Gore, S.(2003). Choosing Assistive Devices – A Guide for Users and Professionals. London, Jessica Kingsley Publishers. • Silverman, F. H. (1980). Communication for the Speechless – An Introduction to Nonvocal Communication Systems for the Severely Communicatively Handicapped. Englewood Cliffs, N. J, Prentice-Hall Inc. • Tetzchner, S. V., & Martinsen, H.(1992). Introduction to Sign Teaching and the Use of Communication Aids. London, Whurr Publishers Ltd. • Vanderheiden, G. C., & Grilley, K. (1975). Non-Vocal Communication Techniques and Aids for the Severely Physically Handicapped. Baltimore University: Park Press. • Von Tetzchner, S., & Nicols Grove. (2010). Augmentative and Alternative Communication: Developmental Issues. Baltimore, Paul. H. Brookes Publishing Company. Unit 3 • Alant, E., & Lloyd. L. L. (2005). Augmentative and Alternative Communication and Severe Disabilities – Beyond Poverty. London:Whurr Publishers Ltd. • Baumgart, D., Johnson, J., & Helmtetter, E. (1990). Augmentative and Alternative Communication System for Persons with Moderate and Severe Disabilities. Baltimore, Paul.H.Brookes Publishing Company. • Bellugi, U., & Studdert-Kennedy, M. (1980). Signed and Spoken Language: Biological Constraints on Linguistic Form. Berlin:Verlag Chemie. • Beukelman, D. R., & Janice, C. (2020). Augmentative and Alternative Communication: Supporting Children and Adults with Complex Communication Needs. Baltimore : Paul H. Brookes Publishing Co., Inc. • Beukelman, D. R., Mirenda, P., & Paul, H. (1998). Augmentative and Alternative Communication – Management of Severe Communication Disorders in Children and Adults. Baltimore, Brookes Publishing Co. • Beukelman, D. R., Yorkston, K. M., & Dowden, P. (1985). Communication Augmentation – A Casebook of Clinical Management. California, College Hill Press Inc. • Bryant, D.P., & Bryant, B. R. (2012). Assistive Technology for People with Disabilities. Boston, Pearson Education Inc.	
--	---	--

	• Chamberlain, C., Morford J. P., & Mayberry, R. I. (2000). Language Acquisition by Eye. New Jersey, Lawrence Erlbaum Associates Publishers. • Cockerill, H., & Carroll-Few, L. (2001). Communicating without Speech: Practical Augmentative and Alternative Communication. London: Mac Keith Press. • Cockerill, H., & Carroll-Few, L. (2010). Communicating without Speech: Practical Augmentative and Alternative Communication for Children (Clinics In Developmental Medicine). Baltimore, MD: Paul.H.Brookes Publishing Company. • Downing, J. E.. (1999). Teaching Communication Skills to Students With Severe Disabilities. Baltimore, Paul.H.Brookes Publishing Company. • Dunn, M. L., (1982). Pre-Sign Language Motor Skills: Skill Starters for Motor Development. Tucson, AZ, Communication Skill Builders. • Enderby, P. (1987). Assistive Communication Aids – for the Speech Impaired. UK, Churchill Livingstone. • Gans, J.B. (2014). Aided Augmentative Communicaiton for Individuals with Autism Spectrum Disorders. New York, Springer. • Ganz, J. B. & Simpson, R. L. (2019). Interventions for Individuals with Autism Spectrum Disorder and Complex Communication Needs. Baltimore : Paul H. Brooks Publishing Co. • Goossens, C., Crain, S., & Elder, P (1992). Engineering the Preschool Environment for Interactive Symbol Communication: 18 months to 5 Years Developmentally. Birmingham, AL, Southeast Augmentative Communication. • Hall, N., Juengling-Sudkamp, J., Gutmann, M L., & Cohn, E. R. (2020). Tele-AAC: Augmentative and Alternative Communication through Telepractice. San Diego, CA : Plural Publishing • Hall, N., Juengling-Sudkamp, J., Gutmann, M L., & Cohn, E. R. (2020). Fundamentals of AAC : a case-based approach to enhancing communication. San Diego, CA : Plural Publishing • Humphries, T., & Padden, C. (1992). Learning American Sign Language. New Jersey, Prentice-Hall Inc. • Johnson, J. M., Baumgart, D., Helmstetter, E., & Curry, C. (1996). Augmenting Basic Communication in Natural Contexts. Baltimore, Paul.H.Brookes Publishing Company. • Hurtig, R. R., & Downey, D. A. (2009). Augmentative and Alternative Communication in Acute and Critical Care Settings. San Diego, Plural Publishing. • Johnson, J. M., Baumgart, D., Helmstetter, E., & Curry, C. (1996). Augmenting Basic Communication in Natural Contexts. Baltimore, Paul.H.Brookes Publishing Company.	
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	• Karanth, P., Roseberry-McKibbin, & James, P. (2017). Intervention for Toddlers using Augmentative and Alternative Communication: Practical Strategies. San Diego, CA : Plural Publishing Inc. • Karanth, P., Roseberry-McKibbin, & James, P. (2017). Intervention for Preschoolers using Augmentative and Alternative Communication: Practical Strategies. San Diego, CA : Plural Publishing Inc. • Kiernan, C., Reid, B., & Jones, L. (1982). Signs and Symbols – Use of Non-Vocal Communication Systems. London: Heinemann Educational Books. • Light, J.C., Beukelman, D. R., & Reichle, J. (2003). Communicative Competence for Individuals who use AAC – From Research to Effective Practice. Baltimore, H. Brookes Publishing Co. • Light J. C., & Biger, C. (1998). Building Communication Competence with Individuals who use Augmentative and Alternative Communication. Baltimore, Paul.H.Brookes Publishing Company. • Lloyd, L. L., Fuller, D.R., & Arvidson, H. H.(1997). Augmentative and Alternative Communication – A Handbook of Principles and Practices., Massachusetts, Allyn & Bacon. • Loncke, F. (2014). Augmentative and Alternative Communication: Models and Applications for Educators, Speech-Language Pathologists, Psychologists, Caregivers, and Users. San Diego, CA, Plural Publishing Inc. • Mackie, N.S., King, J.M., & Beukelman, D.R. (Ed) (2013). Supporting Communication for Adults with Acute and Chronic Aphasia. Baltimore, Paul Brooks Publishing Co. • Mc Neill, D. (2012). How Language Began: Gesture and Speech in Human Evolution. New York, Cambridge University Press. • Owens, R. (2017). Early Language Intervention for Infants, Toddlers, and Preschoolers. NY : Pearson. • Sadao, K. C., & Robinson, N. B. (2010). Assistive Technology for Young Children: Creating Inclusive Learning Environments. Baltimore, Maryland. Paul Brooks Publishing Co. • Shane, H. C., Laubscher, E., Schlosser, R.W., Sorce, J. F., Abramson, J.S., Flynn, S., & Corley, K. (2015). Enhancing Communication of Individuals with Autism: A Guide to the Visual Immersion System. Baltimore, Maryland; Paul Brooks Publishing Co. • Siegel-Causey, E., & Guess, D. (1989). Enhancing Nonsymbolic Communication Interactions Among Learners with Severe Disabilities. Baltimore, MD; Paul.H.Brookes Publishing Company. • Silverman, F. H. (1980). Communication for the Speechless – An Introduction to Nonvocal Communication Systems for the Severely Communicatively Handicapped. Englewood Cliffs, N. J; Prentice-Hall Inc. • Tetzchner, S. V., & Grove, N. (2010). Augmentative and Alternative Communication: Developmental Issues. Baltimore, MD: Paul.H.Brookes Publishing Company	
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	• Tetzchner, S. V., & Jensen, M. H. (1996). Augmentative and Alternative Communication: European Perspectives. London:Whurr Publishers Ltd. • Tetzchner, S. V., & Martinsen, H.(1992). Introduction to Sign Teaching and the use of Communication Aids. London, Whurr Publishers Ltd. • Vanderheiden, G. C., & Grilley, K . (1975). Non-Vocal Communication Techniques and Aids for the Severely Physically Handicapped. Baltimore University, Park Press. • Vicker, B. (1996). Using Tangible Symbols for Communication Purposes: An Optional Step in Building the Two-Way Communication Process. Bloomington, IN: Indiana University. Institute for the Study of Developmental Disabilities. • Wilkinson, K. M., & Finstack, L. H. (2021). Multimodal AAC for Individuals with Downs Syndrome. Baltimore : Paul H. Brookes Publishing Co. Unit 4 • Emmorey, K. (2002). Language, Cognition and the Brain – Insights from Sign Language Research. NJ: Lawrence Erlbaum Associates Inc. Pub. • Goldin-Meadow, S. (2003). The Resilience of Language – What Gesture Creation in Deaf Children Can Tell us About How All Children Learn Language. New York, Psychology Press. • Mindel, M. G. & John, J. (2022). AAC for all: Culturally and Linguistically Responsive Practice. San Diego, CA : Plural Publishing, Inc. • Light, J. C., Beukelman, D. R., & Reichle, J. (2003). Communicative Competence for Individuals Who Use AAC – From Research to Effective Practice. Baltimore, H.Brookes Publishing Co. • Lloyd, L. L., Fuller, D.R., & Arvidson, H. H. (1997). Augmentative and Alternative Communication – A Handbook of Principles and Practices., Massachusetts, Allyn & Bacon. • Loncke, F. T., Clibbens, J., Arvidson, H. H., & Lloyd, L. L. (1999). Augmentative and Alternative Communication- New Directions in Research and Practice. London, Whurr Publishers. • Ogletree, B. (2021). Augmentative and Alternative Communication: Challenges and Solutions. San Diego, CA : Plural Publishing, Inc. • Pain, H., Mclellan, L., & Gore, S.(2003). Choosing Assistive Devices – A Guide for users and Professionals. London, Jessica Kingsley Publishers. • Romski, M. A., & Seveck, R. A. (1996). Breaking the Speech Barrier: Language Development through Augmented Means. Baltimore, MD: Paul.H.Brookes Publishing Company.	
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	- Schlesinger, I. M. & Namir, L. (1978). Sign Language of the Deaf – Psychological, Linguistic and Sociological Perspectives. New York, Academic Press Inc. - Siple, P. (1978). Understanding Language Through Sign Language Research. New York: Academic Press. - Stewart, D. A., Schein, J. D. & Cartwright, B. E. (1998). Sign Language Interpreting – Exploring Its Art and Science., Boston, Allyn And Bacon. Journals to be referred: - Journal of Augmentative and Alternative Communication - Journal of Speech, Language and Hearing - Journal of Communication Disorder - Seminars in Speech & Language	
<u>Course: 4.2 (HC)</u> <u>Cognitive Communication Disorders</u>		
Objectives	After completing the course, the student shall be able to: - Describe Various Conditions in Adults Leading to Cognitive Communication Disorders - Acquire Skills in Cognitive Linguistic Communicative Impairments and Differential Diagnosis of Cognitive Communication Disorders - Acquire Skills in Issues Related to Assessment of Cognitive Communication Disorders - Differentially diagnose between cognitive communication disorders and aphasias. - Acquire Skills in Management of Cognitive Communication Disorders - Critically Evaluate Research Articles Related to Cognitive Communication Disorders	
Unit 1	An Overview of Cognitive Communication Disorders - Aphasia Related, Traumatic Brain Injury (TBI) and Right Hemisphere Damage (RHD) a) Non-Aphasia and Aphasia Related Disorders - Alexia and Agraphia - Acalculia - Finger Agnosia - Right-Left Disorientation	16 hours

	• The Gerstmann Disorders b) Communication Disorders Associated with TBI • Neurology and Neuropathology of TBI • Epidemiology of TBI • Disability Following TBI- WHO-ICF Classification • Cognitive Communication Deficits beyond Aphasia • Discourse in Adults with TBI • Assessment for Planning Functional Context-Sensitive Intervention • Principles of Cognitive Rehabilitation of TBI c) Nature , Assessment and Management of RHD • Theoretical Accounts of Cognitive Communication Deficits In RHD • Symptomatology of Cognitive Communication Disorders in RHD • Assessment of Persons with RHD • Generalization of Treatment Gains • Evidence Based Practices in the Management of RHD d) Treatment for: • Coarse Coding Deficits and Related Difficulties • Suppression Deficits and Related Difficulties • Social Cognition Deficits • Prosody • Discourse and Pragmatics • Reading and Writing • Cognition	
Unit 2	Dementia and Related Cognitive Disorders a) Various Syndromes of Dementia • Neuropathology in Alzheimer's Disease (AD)	18 Hours

	• Mild Cognitive Impairment Symptomatology of Cognitive Communications Disorders in AD • Evaluation of Cognitive Communication Disorders in AD and other Dementias • Cognitive Communication Intervention in Dementia • Role of Speech- Language Pathologist Working with Persons with Dementia. b) Cognitive Communicative Aspects in Primary Progressive Aphasia. • Basic Definition and Terminology Related to PPA • Historical Perspective of PPA • Diagnostic Criteria for PPA • Issues of Classification and Nomenclature in PPA • Clinical Presentation And Characteristics of PPA Management of PPA	
Unit 3	Disorders of Reading, Writing, Alcohol Induced Language Disorders and Metabolic Disorders of Language a) Disorders of Reading • Overview of Reading Disorders • Classification of Reading Disorders and their Neuro-Anatomical Substrates • Models – Dual-Route and Connectionist • Assessment • Intervention b) Disorders of Writing • Overview of Writing Disorders • Models -Dual-Route and Connectionist • Acquired Agraphia • Assessment • Intervention c) Alcohol Induced Language Disorders • Overview of Alcohol Induced Language Disorders • Cognitive Communication Deficits in Alcohol Induced Language Disorders	16 Hours

	• Assessment • Intervention d) Metabolic Disorders of Language • Overview of Metabolic Disorders of Language • Assessment • Intervention e) Differential Diagnosis of Cognitive Communication Disorders in Adults on the Basis of Neurodiagnostic, Cognitive, Linguistic, Communicative Speech - Motor and Behaviour Deficits.	
Unit 4	Ethno-Cultural Dynamics in Cognitive Communication Disorders and Cognitive Communication Approaches. (22 hrs) a) Language as Socio-Cultural • Phenomena in Aging b) Culture and Ethnic Perception of Acquired Illness and Disability c) Role of Supportive Relationships in Cognitive Communication Disorders d) Implications in Rehabilitation e) Cognitive Communication Approaches: • Objectives of Cognitive Approach • Assessment of Cognitive Operations • Cognitive Stimulation: Stimulation of Recognition/Comprehension, Memory, Convergent Divergent and Evaluative Thinking • Relationship of Cognitive Intervention to Life Participation Approach f) Team and Partnerships in Cognitive Communication Disorders g) Rights of Persons with Cognitive Communication Disorders	
Practicum	Learn to use: 1. Different Proforma used in the Assessment of Persons with Cognitive Communication Disorders 2. Independently Carry Out the Bedside Evaluation, Formal and Informal Assessment of Persons with Cognitive Communication Disorders	

	3. Diagnose Persons with Cognitive Communication Disorders using WAB and BDAE, LPT, RTT, PICA, ABCD, MIRBI, BAT, CLQT 4. Different Language Intervention Approaches used in the Treatment of Cognitive Communication Disorders 5. Individual and Group Therapy 6. Prepare a Diagnostic Report of Persons with Cognitive Communication Disorders • Referral • Employers Of Persons with Cognitive Communication Disorders • Medico-Legal 7. Counsel the Persons with Cognitive Communication Disorders and their Family Members 8. Setting up a Center for Cognitive Communication Disorders 9. Assess and Treat the Co-Morbid Deficits in Persons with Cognitive Communication 10. Develop a Network of Professionals at District, State, National and International Levels	
References	Unit 1 111 Glosser, A., Gallagher, E.R., & Kaplan. E. (1998). Aphasia Related Disorders. In Sarno, T.M (3rd Eds). Acquired Aphasia (Pp 309-333). San Diego, Academic Press. 112 Tompkins, A. C., Klepaousniotou, E., & Scott, G. A. (2013). Nature and Assessment of Right Hemisphere Disorders. In I. Papathanasiou, P. Coppens, & C. Potagas (Eds.), Aphasia and Related Neurogenic Communication Disorders (Pp.297-327). Burlington, Jones & Bartlett. 113 Tompkins, A., C. & Scott, G.A (2013). Treatment of Right Hemisphere Disorders. In P. Papathanasiou, P. Coppens., & C. Potagas (Eds.), Aphasia and Related Neurogenic Communication Disorders (Pp.345-359). Burlington, Jones & Bartlett. Unit 2 114 Coelho, C., Cherney, L. R., & Shadden, B. B. (Eds.). (2023). <i>Discourse analysis in adults with and without communication disorders: A resource for clinicians and researchers</i>. Plural Publishing. 115 Duffy, R. J., & McNeil, R. M. (2008). Primary Progressive Aphasia and Apraxia of Speech. In R. Chapey, (4th Eds). Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders (Pp 543-566). Philadelphia: Lippincott Williams & Wilkins. 116 Holland, A. L., & Elman, R. J. (Eds.). (2021). <i>Neurogenic communication disorders and the life participation approach: The social imperative in supporting individuals and families</i>. Plural Publishing.	

	117 Hopper. A. (2013). Dementia and Related Cognitive Disorders. In I. Papathanasiou, P. Coppens, & C. Potagas (Eds.), <i>Aphasia and Related Neurogenic Communication Disorders</i>. (Pp.397-421). Burlington, Jones & Bartlett. 118 Kimbarow, M. L., & Wallace, S. E. (Eds.). (2021). <i>Cognitive communication disorders</i>. Plural Publishing. 119 Utianski, R. L. (Ed.). (2020). <i>Primary progressive aphasia and other frontotemporal dementias: Diagnosis and treatment of associated communication disorders</i> (Vol. 1). Plural Publishing. 120 Ylvisaker, M., Szekeres, F.S., & Feeney, T. (2008). Communication Disorders Associated With Traumatic Brain Injury. In Chahey, R. (4th Eds). <i>Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders</i> (Pp 879-956). Philadelphia, Lippincott Williams & Wilkins. Unit 3 121 Bayles, K., McCullough, K., & Tomoeda, C. K. (2020). <i>Cognitive-communication disorders of MCI and dementia: Definition, assessment, and clinical management</i>. Plural Publishing. 122 Csefalvay, Z., & Papathanasiou, I. (2013). Written Language and its Impairments. In I. Papathanasiou., P. Coppens., & C. Potagas., (Eds.). <i>Aphasia and Related Neurogenic Communication Disorders</i>. (Pp 173-192). Burlington, Jones & Bartlett Learning. 123 Emre, M. (Ed.). (2015). <i>Cognitive impairment and dementia in Parkinson's disease</i>. OUP Oxford. 124 Kimbarow, M. L., (2021). <i>Cognitive communication disorders</i>. Plural Publishing. 125 Morris, J. C. (1994). <i>Handbook of Dementic Illnesses</i>. (Pp-134-172). NY, Marcel Dekker Inc. 126 Riley, A. E., & Kendall, L. D. (2013). Acquired Disorders of Reading. In I. Papathanasiou., P. Coppens., & C. Potagas., (Eds.) <i>Aphasia and Related Neurogenic Communication Disorders</i>. (Pp 17-168). Burlington: Jones & Bartlett Learning. Unit 4 127 Chahey, R. (2008). Cognitive Stimulation: Stimulation of Recognition/Comprehension, Memory, and Convergent, Divergent, and Evaluative Thinking. In R. Chahey (4th Eds). <i>Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders</i> (Pp 469-506). Philadelphia, Lippincott Williams & Wilkins. 128 Payne, C.J. (2013). Ethno-Cultural Dynamics and Acquired Aphasia. In I. Papathanasiou, P. Coppens, & C. Potagas (Eds.), <i>Aphasia and Related Neurogenic Communication Disorders</i>. (Pp. 551-564). Burlington, Jones & Bartlett.	
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	129 Simmons-Mackie, N. (2008). Social Approaches to Aphasia. In Chapey, R. (4th Eds). Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders (Pp 279-290). Philadelphia, Lippincott Williams & Wilkins. Journals to be referred: 1. Aphasiology 2. Journal of Speech- Language and Hearing Research 3. Brain and Language 4. Stroke Rehabilitation 5. Cortex 6. Journal of All India Institute of Speech and hearing 7. Journal of Indian Speech and Hearing Association	
Course: 4.3 (HC) Dissertation		
	Dissertation in: a. Speech Sciences b. Speech Pathology c. Language Science d. Language Pathology	
Course: 4.4 (HC) Clinicals		
	General Consideration e) Post-graduates (PG) must complete the clinical practicum during rotations in clinics. The clinical rotations will provide focused exposure on clinical practice with specific populations (listed below) with communication and swallowing disorders across the lifespan. f) The thrust areas in PG clinics shall be clinical practice with: • children and adults having non-verbal communication via augmentative and alternative tools/strategies (AAC) via in person and tele-mode	

	• CCD via in person and tele-mode g) PGs must be exposed to advanced methodologies (use of gadgets and tools), varied service delivery systems (individual, group, camp based, and tele/mobile based), and evidence- based practices in assessment and management of communication and swallowing disorders. Care must be taken to facilitate clinical exposure and training in addition to those focused in the undergraduate program. h) An additional emphasis should be on facilitating interaction with professionals in transdisciplinary management team (medical and non-medical).	
	<u>Know How:</u> a) Assess candidacy for AAC b) Procedure to select appropriate AAC c) Personalize AAC system d) Observe, correlate and document reports of persons with CCD in tests such as EEG, CT Scan, MRI etc with the clinical manifestation. a) Different medical and rehabilitation professionals work in transdisciplinary team <u>Demonstrate:</u> a) Practice and learn to use the strategies of direct selection, scanning, encoding and word prediction in a communication board/book or aided AAC system in simulated situation b) Learn to operate non-tech, low-tech and high-tech AAC aids c) Use of AAC for adults with communication disorders (e.g., alphabet supplementation board, software applications) d) Prepare a summary report of the commonly available test materials for patients with CCD (including introduction to the test, instructions, details of the test stimuli, norms and interpretation of the test) e) Demonstrate process of differential diagnosis for persons with aphasia and CCD f) Demonstration of therapy techniques for CCD. g) Rights and privileges of persons with CCD h) Certification procedures for persons with CCD i) The use of mobile apps for assessment and management of patients with CCD	

	j) Conduct assessment and management for adult with CCD using tele-practice <u>Do:</u> a) Plan and carry out intervention program for a child as well as an adult with language disorder using AAC b) Plan and carry out intervention program for a child as well as an adult with multiple handicap using AAC c) Carry out complete evaluation, write detailed evaluation report, counsel persons with CCD and their families d) Should administer the available test materials for 2 patients with CCD and maintain the documents for the same e) Should counsel, at least 2 clients CCD; prepare & maintain the counselling report f) Plan and carry out appropriate intervention program for adults with CCD g) Plan and carry out AAC intervention program for an individual with CCD h) Prepare a report for persons with CCD for medico- legal purposes <u>Evaluation:</u> b) Internal Assessment: A continuous formative assessment will be done by the faculty/clinical staff based on clinical activities of the student throughout the semester c) Examination at the end of the semester will include work with the clinical population, sport test, OSCE, records, viva-voce.	
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