

ಮಂಗಳೂರು
MANGALORE



ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
UNIVERSITY

(Accredited by NAAC)

ಕ್ರಮಾಂಕ/ No. : MU/ACC/CR 19/2017-18/A2

ಕುಲಸಚಿವರ ಕಛೇರಿ

ಮಂಗಳಗಂಗೋತ್ರಿ - 574 199

Office of the Registrar

Mangalagangothri - 574 199

ದಿನಾಂಕ/Date:04.12.2021

NOTIFICATION

Sub: Syllabus for M.Sc. Speech Language Pathology Programme.

Ref: 1. Academic Council approval vide agenda

No.: ಎಸಿಸಿ:ಶೈ.ಸಾ.ಸ.1:19(2021-22) dated 04.08.2021

2. Hon'ble Vice Chancellor's order dated 19.11.2021

Pursuant to the above, the syllabus for M.Sc. Speech Language Pathology Programme which has been approved by the Academic Council at its meeting held on 04.08.2021 is hereby notified for implementation with effect from the academic year 2020-21 subject to the pending approval for the amendments to the Regulations Governing the Choice Based Credit System (CBCS) for the two years (Four Semesters) Post Graduate Degree Programmes in the Faculties of Arts, Science, Commerce and Education from the Government.


REGISTRAR

To,

1. Principals of the College concerned.
2. Dr. Divyanjali Shetty, Chairperson, BOS in Speech Language & Hearing, Dr.M.V. Shetty, College of Speech & Hearing, Maladi Court, Mangalore- 15.
3. The Registrar (Evaluation), Mangalore University.
4. The Superintendent (ACC), O/o the Registrar, Mangalore University.
5. The Asst. Registrar (ACC), O/o the Registrar, Mangalore University.
6. Guard File.

Mangalore University

Regulation and Syllabus

for

MASTER OF SCIENCE (SPEECH-LANGUAGE PATHOLOGY)

M.Sc. (SLP)

(CHOICE BASED CREDIT SYSTEM – SEMESTER SCHEME)

From the Academic year 2021-22 onwards

**REGULATIONS GOVERNING THE CHOICE BASED CREDIT SYSTEM FOR THE
TWO YEARS (FOUR SEMESTERS) POST GRADUATE DEGREE PROGRAMME
in**

**Master of Science (Speech Language Pathology) –M.Sc. (SLP)
(Framed under Section 44(1) (c) of the KSU Act 2000)**

PREAMBLE:

The University Grants Commission, New Delhi, has directed all Universities in the country to implement the Choice Based Credit System (CBCS, Semester Scheme) in both under and post-graduate programmes and has been issuing a series of guidelines with regard to this. The Higher Education Council, Government of Karnataka, has considered the implementation of CBCS and has organized workshops in this regard. The Choice Based Credit System enables the degrees of Mangalore University to be on par with the global standards. Given the present trend of globalization, it is all but fitting that Mangalore University should adopt the CBCS so that the acceptability of the programmes and degrees offered by the University becomes comparable and readily acceptable. After due consideration, thus, the following Regulations were drawn up.

1. TITLE and COMMENCEMENT:

The title of the programme shall be **Master of Science (Speech-Language Pathology). M.Sc. (SLP)** shall be the short form. The course would be a Choice Based Credit System for 2 years (4 semesters). These regulations shall come into force from the academic year 2021-22.

2. DEFINITIONS:

- i) **Programme:** An educational programme leading to award of a Post Graduate Degree.
- ii) **Semester:** Each semester will consist of minimum of 16 weeks of academic teaching /instruction days. The odd semester is ordinarily scheduled from July to December and even semester from January to June.
- iii) **Credit:** A unit by which the course work is measured. It determines the number of hours of instructions required per week.
- iv) **Course:** A unit of study (earlier called a “paper”) within a subject carrying a fixed number of credits.
- v) Core Course is related to the discipline of the programme. This is further divided into:

Hard Core: These courses are compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.

Soft Core: These courses are electives and related to the discipline of the programme.

- vi) **Open Elective:** A course to be opted by the student from out of the choices offered by other programmes.
- vii) **Tutorial:** A period of teaching that involves discussion between an individual student or a small group of students and a teacher.
- viii) **Credit Point:** It is the product of grade point and number of credits for a course.
- ix) **Alpha-sign Grade:** It is an index of the performance of students in a said course. Grades are denoted by letters and a sign + i.e., OO, OA+, AB, AB+, CC etc to indicate semester grades and O, A, B+, B, and C. to indicate programme grades.
- x) **Grade Point:** It is a numerical weight allotted to each alpha-sign grade on a 10-point scale.

3. ELIGIBILITY FOR ADMISSION

Candidates with B.A.S.L. P/ B. ASLP /B.Sc. (Speech & Hearing) degree of any recognized university by the Rehabilitation Council of India or any other degree considered as equivalent thereto and having an average of not less than 45% (40% for SC/ST/Category-I candidates) marks in the subject. of marks are eligible for admission to M.Sc. (SLP).

‘Average’ refers to average of the aggregate marks obtained in all the years/semesters of the qualifying examination.

- a. Relaxation in the qualifying marks for designated categories of students shall be as per the rules and regulations of Mangalore University.
- b. No age bar for Applicants

4. DURATION

The duration of Master Degree Programmes shall extend over 4 semesters each of a minimum of 16 weeks of instruction and 2 to 4 weeks for preparation and examination.

5. MAXIMUM PERIOD FOR COMPLETION OF THE PROGRAMME:

The candidate shall complete the Master Degree programme within four years from the date of admission to the programme

6. MEDIUM OF INSTRUCTION:

The medium of instruction shall be English.

7. ATTENDANCE:

- a) Each course (theory, practical) shall be treated as an independent unit for the purpose of attendance. A student shall attend a minimum of 80% of the total instruction hours and 90% in clinicals in each semester for students to be eligible to appear for examination at the end of each semester.
- b) There shall be no provision for condonation of shortage of attendance and a student who fails to secure 80% attendance in a course shall be required to repeat that course to accrue the credit.

8. COURSE PATTERN:

- 8.1 Each postgraduate programme will comprise “core” and “elective” courses. The “Core course” will further consist of “hard” and “soft” core courses. Hard core courses can have 3-5 credits. Soft core courses can have 3-4 credits. Practical (Hard core) can have 2-5 credits. Open Electives have 3 credits each. Dissertation will carry 6 credit points with the total credit of 92 including open electives.

Course/credit pattern:

Semester Credits	Hard Core (Theory ×Credits)	Soft Core (Theory ×Credits)	Open Elective (OE)	Clinical Practicum(P) (Hard Core)	Total Credits
First	3 (4) = 12	2(4) = 8	-	5	25
Second	3(4) = 12	1(4) = 4	3	5	24
Third	2(4) = 8	1(4) = 4	3	4	19
Fourth	2(4) = 8 1(6) = 6	1(4) = 4	-	4	22
Total	40	20	6*	18	90

Total Credits from all the Four Semesters (1st, 2nd, 3rd and 4th Semesters): 25+24+19+22 = 90

Total Hard-Core credits = 40 (H) + 18 (P) = 58= **64.44%**

Total Soft-Core credits = 20(S) + 6 (D) = 26=**28.88%**

***Open Elective Credits** = 6 = **6.66%** (Not to be considered for calculating the CGPA)

H= Hard Core, S= Soft Core, P =Clinical Practicum, D = Dissertation

The following credits are defined by considering 16 weeks of each semester of 6 working days

- For Theory papers:** 1 Credit = 1hour/week
[4 credits for Hard Core and 4 credits for Soft Core theory papers/week]
- Clinicals = Clinical practicum,** 1 credit = 3 hours of clinical practicum for 5 days of a week.
- Special Note:** As per the general guidelines of Mangalore University, a total of **84 to 92 credits are allotted** for post graduate programme. In this, the **hard core** will make up **50%-65%** of the total credits, **soft core 30%-45%**, while the open electives will have a **fixed 6 credits (3 credits x 2 courses)**. A student has to take **minimum of 18 credits** and **maximum of 26 credits** in any semester.

DETAILED DISTRIBUTION OF COURSE & CREDITS

Programme: Speech Language Pathology-

First Semester

Course Code	Course Title	Examination		Teaching		Exam Hours	Credits
		Theory	IA	Hours/Week	Hours/Sem		
SLPH 101	Research Methods, Epidemiology and Statistics	70	30	4	64	3	4
SLPH 102	Neurobiology of Speech Language and Cognition	70	30	4	64	3	4
SLPH103	Speech Science and Speech Production	70	30	4	64	3	4
SLPS 104	Clinical Linguistics and Multilingual Issues or	70	30	4	64	3	4
SLPS 105	Clinical Psychology	70	30	4	64	3	4
SLPS 106	Language and Literacy Disorders	70	30	4	64	3	4
SLPS 107	Or Technology for Speech Language Pathology	70	30	4	64	3	4
SLPCP 108	Clinical Practicum in Speech Language Pathology	-	100	15	-	-	5

Total credits = 25 (Hard Core-8+4=12, Soft Core-8, Clinical Practicum-5)

Second Semester

Course Code	Course Title	Examination				Exam Hrs	Credits
		Theory	IA	Hours/Week	Hours/Sem		
SLPH 201	Language Disorders in Children	70	30	4	64	3	4
SLPH 202	Voice: Science and Disorders	70	30	4	64	3	4
SLPH 203	Advances in Speech Sound Disorders	70	30	4	64	3	4
SLPS 204	Dysphagia	70	30	4	64	3	4
SLPS 205	Or Suprasegmentals and Musical Acoustics	70	30	4	64	3	4
SLPCP206	Clinical Practicum in Speech Language Pathology	70	30	15	-		5
Open Elective	Speech Subsystems Or Perspectives on Speech Disorder	70	30	3	48	3	3

Total credits = 24 (Hard Core = 12, Soft Core-4, Clinical Practicum-5, Open Elective = 3)

Third Semester

Course Code	Course Title	Examination		Teaching		Exam Hrs	Credits
		Theory	IA	Hours / Week	Hours/Sem		
SLPH 301	Disorders of Fluency	70	30	4	64	3	4
SLPH 302	Neurogenic Speech Disorders	70	30	4	64	3	4
SLPS 303	Augmentative and Alternative Communication	70	30	4	64	3	4
SLPS 304	Or Community Based Rehabilitation	70	30	4	64	3	4
SLPCP 305	Clinical Practicum in Speech Language Pathology	-	100	15	-	3	4
Open Elective	Speech Language Pathology as a Profession Or Fundamentals in Communication Disorders	70	30	3	48	3	3

Total Credits = 19 (Hard Core-8, Soft Core-4, Clinical Practicum-4 and Open Elective-3).

Fourth Semester

Course Code	Course Title	Evaluation		Teaching		Exam Hrs	Credits
		Exam	IA	Hours/Week	Hours/Sem		
SLPH 401	Aphasia	70	30	4	64	3	4
SLPH 402	Speech Language Pathology in Practice	70	30	4	64	3	4
SLPS 403	Cognitive Communication Disorders	70	30	4	64	3	4
SLPS 404	Or Aging and Communication	70	30	4	64	3	4
SLPS 405	Dissertation in Speech Sciences/Pathology	70	30			3	6
SLPS 406	Or Dissertation in Language Sciences/Pathology	70	30			3	6
SLPCP 407	Clinical Practicum in Speech Language Pathology	70	30	15	-	3	4

Total Credits = 22 (Hard Core-8, Soft Core = 4+6 =10, Clinical Practicum-4).

- 8.2 Core Course is related to the discipline of the programme. This is further divided into Hard Core and Soft Core. Hard core courses are compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study. Soft Core courses are elective but related to the discipline of the programme. The soft-core subjects are as per the subjects specified by Board of Studies. These soft-core courses are offered in all Semesters.
- 8.3 Out of the total of 90 credits of the programme, the hard core will make up 50%-65% of the total credits, soft core 30%-45% while the open electives will have a fixed 6 credits (3 credits x 2 courses). A student has to take minimum of 18 credits and maximum of 26 credits in any semester.
- 8.4 A credit is a unit by which the course work is measured. It determines the number of hours of instructions required per week. One credit is equivalent to one hour of teaching per week.
- 8.5 All courses need not carry the same weight (credit). The courses should define learning objectives and learning outcomes. A course may be designed to comprise lectures/ tutorials/ laboratory work/ field work/ outreach activities/ project work/ vocational training.
- 8.6 In the case of subjects with practical there shall be minimum of 16 credits of practical in the programme.
- 8.7 A Dissertation is taken up in the third semester or at the beginning of the fourth semester. However, credit for the dissertation is counted for the fourth semester only.
- 8.8 A student can take the courses offered by the university as per the Rehabilitation Council of India Syllabus which is speculated in the particular semester. Open electives are taken in 2nd and 3rd semesters from any of courses offered by the Mangalore University.
- 8.9 The performance of a student in a course is graded and the “grade” is an index of the performance of that student. The overall performance of a student over the whole programme is expressed as Cumulative Grade Point Average (CGPA).
- 8.10 The CGPA of a programme shall be declared on the basis of the total credits that a student secures in hard and soft core courses including Dissertation. Credits of the open electives shall not be considered in declaring the CGPA. However, a student has to compulsorily take one open elective each in the second and the third semesters (two open elective courses in all) and secure a minimum of 6 credits in the open elective courses to qualify to pass the programme.

- 8.11 The grade card is not a statement of Marks. However, the printed CGPA card issued by the university shall declare a formula to convert the CGPA to an overall percentage.
- 8.12 Boards of Studies shall exercise care in framing open elective courses and see that these courses are not general introduction to an area of study. The open electives offered by the departments will maintain the level and standards of other postgraduate courses offered by them. Care must also be exercised to see that open elective courses will not repeat undergraduate syllabi.
- 8.13 A student may take extra courses over and above the prescribed number in a programme. However, the credits so earned in excess shall not be considered in the declaration of the CGPA.
- 8.14 A student can earn credits in soft core courses by doing them in a department other than the one to which he is admitted, provided that such courses are considered as relevant to his discipline by the Board of Studies and provided, further, that the Councils of the departments concerned approve it.
- 8.15 Two or more open electives may be offered in the second and third semesters by every department.

9. THE SCHEME OF EXAMINATION:

There shall be examinations at the end of each semester ordinarily during November/December for odd semesters and during May/June for even semesters. Each course shall be evaluated with 30% of marks shall be for continuous internal assessment and 70% of the marks for the end-semester examinations as per the guidelines of Mangalore University.

10. CONTINUOUS INTERNAL ASSESSMENT:

Marks for internal assessment shall be awarded on the basis of seminars, field work, tests, assignments etc. The internal assessment marks shall be notified on the department / college notice board for information of the students and it shall be communicated to the Registrar (Evaluation) before the commencement of the University examinations, and the Registrar (Evaluation) shall have access to the records of such internal assessment evaluations.

11. REGISTERING FOR THE EXAMINATIONS:

The candidate shall register for all the courses in the subject of a semester when he/she appears for the examination of that semester for the first time.

12. VALUATION OF ANSWER SCRIPTS:

12.1 a. Normally a course, including dissertation shall be evaluated by one internal and one external examiner.

b. Clinical Practicum examination of 1st and 3rd semester shall be evaluated by two designated internal faculty of the college/Department.

c. Clinical practicum examination of 2nd and 4th semester shall be jointly conducted and evaluated by one internal examiner and one external examiner or two external examiners if there are no internal examiners.

d. Each written course on open elective has to be valued by one examiner

12.2 There will be viva-voce examination for Dissertation in the final year (Fourth Semester) along with the Clinical Practicum examination. A dissertation shall be evaluated by two examiners, one external and one internal out of the panel of examiners prepared by the B.O.S. and approved by the University. Further, the internal guide, if he is not a member of the BOE, shall be co-opted as a member for the viva-voce examination.

12.3 If the difference in marks awarded by two evaluators is more than 20% of the maximum marks of the examination of the paper, the Registrar (Evaluation) shall check the entries and the total marks assigned by the two evaluators. If there is any mistake in totalling, it shall be rectified. While checking the total, if it is observed that any one or more of the answers is not valued by one of the evaluators, the Registrar (Evaluation) shall advise the internal members of the Board of Examiners to value that answer. After receiving the marks, the Registrar (Evaluation) shall make the necessary corrections. Despite all these corrections, if the difference between the two valuations is still more than 20%, the Registrar (Evaluation) shall refer such answer scripts to the Chairman of the BOE for arranging third valuation by the examiners from among the approved panel of examiners.

12.4 In case of two valuations, the average of the two valuations and if there are three valuations, the average of the nearest two valuations shall be taken for declaring results.

13. CHALLENGE VALUATION:

- 13.1 A Candidate who has appeared for an examination conducted by Mangalore University may apply through the Department/College for Challenge Valuation on payment of the prescribed fee, within 20 days after the publication of the results or 10 days from the date of dispatch of the marks cards by the Registrar (Evaluation) to the department / colleges whichever is later.
- 13.2 Procedure for challenge valuation shall be as per the guidelines framed by the Mangalore University from time to time.

14. CLASSIFICATION OF SUCCESSFUL CANDIDATES:

The results of successful candidates at the end of each semester shall be declared in terms of Grade Point Average (GPA) and alpha-sign grade. The results at the end of the programme shall be classified on the basis of the Cumulative Grade Point Average (CGPA) obtained in all the four semesters and the corresponding programme alpha-sign grade.

The Grade Point Average (GPA) in a Semester and the Cumulative Grade Point Average (CGPA) at the end of fourth semester shall be computed as follows:

14.1 Grade Point Average (GPA):

The grade points in a course shall be assigned on the basis of actual marks scored (end Semester examination and I.A.) in that course as per the table given below, they have secured a minimum of 35% marks in the end Semester examination. The candidate securing less than 35% marks in the end Semester examination in any unit/ theory/ practical/ project work/ dissertation/ internship shall be declared to have failed in that unit indicated with FF grade. A student obtaining grade FF or absent will be required to reappear in the examination of that course.

Table: Grades (alpha-sign) and grade points

Grade	Limits*	Grade point
OO+	95-100	10
OO	90-94	9.5
OA+	85-89	9
OA	80-84	8.5
AA+	75-79	8
AA	70-74	7.5
AB+	65-69	7
AB	60-64	6.5
BB+	55-59	6
BB	50-54	5.5
BC	45-49	5
CC	40-44	4.5
PP	35-39	4
FF	0-34	0

- Limits are considered after converting the marks out of 100 in that course.

14.2 The SGPA is the ratio of the sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student (except open electives and extra courses) and the sum of the number of credits of all these courses undergone by a student during that semester. It shall be expressed up to two decimal places.

SGPA (Si) = $\Sigma(C_i \times G_i) / \Sigma C_i$ where C_i is the number of credits of the i^{th} course and G_i is the grade point scored by the student in the i^{th} course.

Grade Card: Based on the above recommendations on alpha-sign grades, grade points, SGPA, and CGPA, the University shall issue the Grade Card for each semester and a Programme Grade Card indicating the performance in all semesters. The Grade Card may also indicate that the grade points are in 10-point scale.

Table 2: An example of the Calculation of SGPA

Course Code	Credit	Grade awarded	Grade points	Credit Points
C1	4	OA	8.5	34
C2	4	AB+	7.0	28
C2	4	BC	5.0	20
C3	3	OA	8.5	25.5
C4	3	OO+	10.0	30
C5	4	AA	7.5	30
C6	2	PP	4.0	8
Total				175.5
SGPA	= sum of the credit points/Sum of the credits = 175.5/24=7.3125 $\approx$ 7.31			

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

CGPA = $\Sigma(C_i \times S_i) / \Sigma C_i$ where S_i is the SGPA of the i^{th} semester and C_i is the total number of credits in that semester.

Table 3: Illustration for CGPA

	Semester I	Semester II	Semester III	Semester IV
Credit	20	18	20	24
SGPA	8.23	7.31	6.95	8.20

$$CGPA = \frac{20 \times 8.23 + 18 \times 7.31 + 20 \times 6.95 + 24 \times 8.20}{82} = 631.98/82 = 7.71$$

CGPA will not be declared in the case of such candidates who either secure grade FF or absent in any one of the courses including open electives of the programme.

The alpha-sign grade of a programme is determined based on CGPA as given below

Table 4: Programme alpha-sign grade

Programme alpha-sign grade	CGPA
O+	More than or equal to 9 but less than 10
O	More than or equal to 8 but less than 9
A+	More than or equal to 7 but less than 8
A	More than or equal to 6 but less than 7
B +	More than or equal to 5.5 but less than 6
B	More than or equal to 5 but less than 5.5
C	More than or equal to 4 but less than 5

Grade Card: Based on the above recommendations on alpha-sign grades, grade points, SGPA, and CGPA, the University shall issue the Grade Card for each semester and a Programme Grade Card indicating the performance in all semesters. The Grade Card may also indicate that the grade points are in 10-point scale.

15. MINIMUM FOR A PASS:

- 15.1 A candidate shall be declared to have passed the PG programme if he/she secures at least a CGPA of 4.0 (Course Alpha-Sign Grade C).
- 15.2 The candidates who pass all the semester examinations in the first attempts in two years are eligible for ranks provided they secure at least a CGPA of 6.0 (at least Alpha-Sign Grade A).
- 15.3 The results of the candidates who have passed the fourth semester examination but not passed the lower semester examinations shall be declared as NCL (Not Completed Lower semester examinations). Such candidates shall be eligible for the degree only after completion of all the lower semester examinations.
- 15.4 A candidate who passes the semester examinations in parts is eligible for only CGPA and Alpha-Sign Grade but not for ranking.
- 15.5 There shall be no minimum in respect of internal assessment and viva-voce marks.
- 15.6 A Candidate who fails in any of the unit/project work/Project Report/ dissertation shall reappear in that unit/project work/Project Report/ dissertation and pass the examination subsequently.

16. CARRY OVER PROVISION:

Candidates who fail in a lower semester examination may go to the higher semesters and take the examinations.

17. REJECTION OF RESULTS:

- 17.1 A candidate who fails in one or more courses of a semester may be permitted to reject the result of the whole examination of that semester. Rejection of result course wise shall not be permitted. A candidate who rejects the results shall appear for the whole examination of that semester in the subsequent schedule of examinations.
- 17.2 Rejection shall be exercised only once in each semester and the rejection once exercised shall not be revoked.
- 17.3 Application for rejection along with payment of the prescribed fee shall be submitted to the Registrar (Evaluation) through the department/college together with the original statement of marks 45 days in advance of the pertinent semester examination whenever held.
- 17.4 A candidate who rejects the result is eligible for class and not for ranking.

18. IMPROVEMENT OF RESULTS:

- 18.1 A candidate who passes all the courses of a semester may be permitted to improve the result by reappearing for the whole examination of that semester.
- 18.2 The reappearance could be permitted twice during double the period without restricting it to the subsequent examination only. The regulation governing maximum period for completing various degree/ diploma programme notified by the University from time to time shall be applicable for improvement of results also.
- 18.3 The student could be permitted to apply for the improvement examination 45 days in advance of the pertinent semester examination whenever held.
- 18.4 If the candidate passes in all the subjects in the reappearance, higher of the two aggregate marks secured by the candidate shall be awarded to the candidate for that semester. In case the candidate fails in the reappearance, candidate shall retain the first appearance result.

18.5 A candidate who appears for improvement is eligible for class and not for ranking.

19. Internal assessment marks shall be shown separately in the marks card. A candidate who has rejected the result or who, having failed, takes the examination again or who has appeared for improvement shall retain the internal assessment marks already obtained.

20. A candidate who fails in any of the semester examinations may be permitted to take the examinations again at a subsequent appearance as per the syllabus and scheme of examination in vogue at the time the candidate took the examination for the first time. This facility shall be limited to the following two years and this provision may also be extended to a candidate who rejects or improves the result.

A. BASIS FOR INTERNAL ASSESSMENT:

- i) Internal assessment marks in theory papers shall be based on two tests. The tests may be conducted in 8th and 14th week after the start of a semester. Average of two test marks will be considered as internal assessment marks.
- ii) Clinical examinations for odd semesters shall be conducted by the designated internal faculty of the department at the end of 1st and 3rd semester. IA marks shall be awarded by all the faculty of the department on the basis of the assessment of the candidates' work throughout the particular semester.
- iii) Clinical examinations for even semesters will be conducted by one internal and one external examiner at the end of the 2nd and 4th semester, respectively. The examiners shall also evaluate records of clinical and practical work of the students.

B. THEORY QUESTION PAPERS PATTERN:

The syllabus of hard core and soft-core course shall be grouped into 5 units of 16 teaching hours per week. Open Elective shall be of 5 units of 3 teaching hours per week. Each unit is compulsory and questions would be drawn from each unit of Hard/Soft core subjects. An equal weightage of 14 marks would be allotted for each unit. Every question may have 2 or 3 subdivisions.

C. CLINICAL PRACTICUM EXAMINATION PATTERN:

Clinical practicum examination would be conducted after every semester for MSc Speech Language Pathology. In odd semesters, clinical examination will be conducted by two internal examiners. For even semesters, the clinical examination will be conducted by one internal and an external examiner.

D. BOARD OF EXAMINERS

There shall be a Board of Examiners for scrutinizing and approving the question papers as well as scheme of valuation. Fifty percent of the members in the Board of Examiners shall be from outside the institution.

E. AWARD OF DEGREE

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

OBJECTIVES OF THE SYLLABUS

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

1. Diagnose and manage disorders of Speech, Language and Swallowing across life span.
2. Counsel and guide persons with disorders of Speech, Language and Swallowing as well as their family members.
3. Implement rehabilitation programs for persons with Speech, Language and Swallowing disorders.
4. Liaise with professionals in allied fields and other stake holders.
5. To function as the disability certification authority in the field.
6. Implement prevention and public education programs.
7. Undertake advocacy measures on behalf of and for persons with Speech, Language and Swallowing disorders.
8. Advise government and other institutions on legal and policy issues related to persons with Speech, Language and Swallowing disorders.
9. To establish and administer institutions of higher learning in the area.
10. Function as researchers in institutions of higher learning.

PROGRAMME OUTCOMES

1. Eligible to work as clinician, academician and researcher in hospitals, government/private sector and institutions.
2. To work as an expert in diagnosis, management and counselling of Speech, Language and Swallowing disorders.
3. Eligible to provide rehabilitation programs for persons with Speech, Language and Swallowing disorders.
4. Equip themselves with up-to-date knowledge in the field of frontier areas of Speech, Language and Swallowing.
5. To take up research and development positions in the area of Speech Language Pathology.
6. To use knowledge for the betterment of persons with disabilities

MASTER OF SCIENCE (Speech Language Pathology)

Existing CBCS SCHEME (MODEL QUESTION PAPER PATTERN)

(All Units are Compulsory)

Paper Title:Max. Marks: 70

Paper Code:

Unit no.	Question Number	Question/s	Marks
I	1)	A x xxxxxxxxxxxxxxxxxxxxxxxx OR	14
	2 (a)	B x xxxxxxxxxxxxxxxxxxxxxxxx	8
	2 (b)	C x xxxxxxxxxxxxxxxxxxxxxxxx	6
II	3 (a)	D x xxxxxxxxxxxxxxxxxxxxxxxx	10
	3 (b)	E x xxxxxxxxxxxxxxxxxxxxxxxx OR	4
	4)	F x xxxxxxxxxxxxxxxxxxxxxxxx	14
III	5 (a)	G x xxxxxxxxxxxxxxxxxxxxxxxx	6
	5 (b)	H x xxxxxxxxxxxxxxxxxxxxxxxx	4
	5 (c)	I x xxxxxxxxxxxxxxxxxxxxxxxx OR	4
	6 (a)	J x xxxxxxxxxxxxxxxxxxxxxxxx	7
	6 (b)	K x xxxxxxxxxxxxxxxxxxxxxxxx	7
IV	7 (a)	L x xxxxxxxxxxxxxxxxxxxxxxxx	4
	7 (b)	M x xxxxxxxxxxxxxxxxxxxxxxxx	4
	7 (c)	N x xxxxxxxxxxxxxxxxxxxxxxxx OR	6
	8)	O x xxxxxxxxxxxxxxxxxxxxxxxx	14
V	9 (a)	P x xxxxxxxxxxxxxxxxxxxxxxxx	8
	9 (b)	Q x xxxxxxxxxxxxxxxxxxxxxxxx OR	6
	10 (a)	R x xxxxxxxxxxxxxxxxxxxxxxxx	8
	11 (b)	S x xxxxxxxxxxxxxxxxxxxxxxxx	6

I Semester

SLPH 101: Research Methods, Epidemiology and Statistics

Marks-100

64 Hours

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

- a) clinical research designs and statistical methods,
- b) epidemiological issues and its relevance in speech-language research,
- c) evidence based practice in speech and language pathology, and
- d) ethical practices in research

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

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

Unit 2: Epidemiology

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

Unit 3: Statistical Measures and their Features

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

Unit 4: Regression, Univariate and Multivariate Analysis

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

Unit 5: Evidence Based Practice

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

Recommended Reading

- Russell Carter, Jay Lubinsky (2016). Rehabilitation Research: Principles and Applications. Elsevier
- Robert E. Owens Jr., Dale Evan Metz, Kimberly A. Farinella (2014). Introduction to Communication Disorders: A Lifespan Evidence-Based Perspective. Pearson Education
- Laura M. Justice, Erin Redle (2013). Communication Sciences and Disorders: A Clinical Evidence-Based Approach. Pearson Education.
- Robert F. Orlikoff, Nicholas E. Schiavetti, Dale Evan Metz (2014). Evaluating Research in Communication Disorders. Pearson Education
- David L. Irwin, Mary Pannbacker, Norman J. Lass (2013). Clinical Research Methods in Speech-Language Pathology and Audiology. Second Edition. Plural Publishing
- Timothy Meline (2009). A Research Primer for Communication Sciences and Disorders. Pearson Education

- David L. Maxwell, Eiki Satake. (2006) Research and Statistical Methods in Communication Sciences and Disorders. Thomson/Delmar Learning.
- John C Reinard (2006). Communication Research Statistics. SAGE Publications
- Nicholas Schiavetti, Dale Evan Metz (2006). Evaluating Research in Communicative Disorders. Allyn & Bacon
- Tim Pring (2005). Research Methods in Communication Disorders. Wiley
- Donald G. Doehring (2002). Research Strategies in Human Communication Disorders. Pro-Ed
- Carole E. Johnson, Jeffrey L. Danhauer (2002). Handbook of Outcomes Measurement in Audiology. Singular
- David L. Maxwell, Eiki Satake (1997). Research and Statistical Methods in Communication Disorders. Williams & Wilkins

SLPH 102: Neurobiology of Speech-Language and Cognition

Marks-100

64 Hours

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

- a) Explain the anatomy and physiology of nervous system and role of neurotransmitters in relation to speech-language and its disorders,
- b) know the laboratory - based procedures in understanding neural bases of speech- language,
- c) discuss and interpret the neuro-diagnostic findings,
- d) describe the neural bases of speech-language,
- e) know the effect of aging on CNS structures, and
- f) Discuss research relevant to neuroscience of speech-language.

Unit 1: Anatomy and Physiology of the Nervous System Related to Speech-language

- a) Review of central nervous system and peripheral nervous system, cortical and subcortical pathways
- b) Blood supply to CNS
- c) Neurotransmitters – types and classification, major location, functions and synthesis / chemical composition; signal propagation in the nervous system
- d) Neurotransmitters in neuro-pathological conditions influencing speech, language and related disorders
- e) Brain plasticity
- f) Functional organization of brain – lateralization of functions
- g) Evidence from neuro-imaging studies on speech perception, comprehension and production

Unit 2: Methods of Understanding the Neurological Status of Speech-language Mechanisms

- a) Clinical examination of neurological status - history, physical examination, reflexes
- b) Neuro-diagnostic procedures for routine clinical examination – cranial nerve examination, sensory & motor examination, examination of mental functions
- c) Neuro-imaging procedures: X-Ray, CT scan, MRI, fMRI, TCMS, PET, SPECT, and others - advantages and disadvantages
- d) Neuro-physiological procedures - Evoked potentials (visual, auditory and somato- sensory), eye-tracking, electromyography (EMG), [magnetoencephalography \(MEG\)](#)-Advantages and disadvantages
- e) Neuro-behavioral procedures - neurolinguistic investigation, priming and its types, reaction time measures and other related procedures

Unit 3: Cognitive Process Models and Implications of Information Processing for Speech-language

- a) Types and Models of Attention - Broadbent's Bottleneck Model, Norman and Bobrow's Model, Treisman model, Deutsch and Deutsch model.
- b) Types and Models of memory (Atkinson and Shiffrin's multistore Model, Craik and Lockhart's Levels of Processing model, Baddeley's Working Memory model)
- c) Role of attention and memory in the development of speech and language - models of cognitive-linguistic process (hierarchical, process, interactive, computational, neural network); bilingual models (simultaneous and sequential processing)

Unit 4: Neural basis of Speech-language and Cognition

- a) Neural network of speech perception, semantic processing and sentence comprehension - Spoken word recognition, auditory word recognition, visual word recognition, sentence processing and discourse comprehension
- b) Neural basis of speech production (sound, syllable, word and sentences)
- c) Evidence from research studies - behavioral, neuroimaging and evoked potentials studies in normals and persons with neurological disorders
- d) Neural basis for cognitive processes and its relation to language processes
- e) Neural network for reading, writing and spelling
- f) Representation of languages in the brain – Monolingual, bilingual and multilingual

Unit 5: Neuroscience of Aging and its Effect on Speech-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 - cellular, genetic, cumulative, random cell damage, programmed cell death, high level control of aging, cellular theories, geriatric theories and other theories
- c) Neurophysiological / functional changes with age: accuracy, speed, range, endurance, coordination, stability and strength; neurobehavioral correlates of aging -lateralization of functions across life span, cerebral asymmetry, electrophysiological and behavioral evidences
- d) Effects of aging on speech and language across life span: in typical and pathological conditions.
- e) Effect of aging on cognitive dimension and speech perception

Recommended Reading

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

SLPH 103: Speech Science and Speech Production

Marks-100

64 Hours

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

- a) Describe the physiology of speech production,
- b) Discuss acoustic theories of speech production,
- c) Describe the acoustic characteristics of speech sounds
- d) Know the application of acoustic analysis and speech synthesis.

Unit 1: Introduction to the Study of Speech Physiology

- a) Physiological aspects of speech production (respiration, laryngeal and articulatory subsystem)
- b) Aerodynamics of speech: mechanics of airflow – laminar, orifice and turbulent flow: maintenance of airway pressure for speech
- c) Speech breathing
- d) Lower air way dynamics: anatomy, laryngeal and lung activity in speech: conversational speech and loud speech; glottal activity in the production of speech sounds and whisper
- e) Upper airway dynamics: constrictors in upper airway; aerodynamics of speech sounds
- f) Measures of respiratory analysis and instrumentation: intraoral and sub glottal pressure; instrumentation

Unit 2: Theories of Speech Production

- a) Acoustic theory of speech production: source and filter characteristics; output speech and its characteristics
- b) Critical evaluation of acoustic theory of speech production
- c) Aspects of speech acoustics
- d) Aspects of prosody and their realization
- e) Characteristics and production of vocal music: Contrast with speech production

Unit 3: Instrumentation for Studying Speech

- a) Acoustic analysis of speech - techniques of digital signal processing, Long Term Average Spectrum
- b) Software for acquisition and acoustic analysis – freeware and patented software
- c) Spectrogram: Identification of sounds and their acoustic features through spectrogram
- d) Physiological measurements: Techniques and instrumentation like Electromyography Stroboscope, Electroglottography, Ultrasound, EMMA, evoked potentials, fMRI, PET

Unit 4: Acoustic and Aerodynamic Characteristics of Speech Sounds

- a) Vowels And Diphthongs
- b) Plosives
- c) Nasal Consonants
- d) Fricatives
- e) other consonants - affricates, glides and liquids
- f) effects of context and speaker

Unit 5: Application of Acoustic Analysis and Speech Synthesis

- a) Applications of acoustic analysis in speech disorders
- b) Forensic applications: semiautomatic and automatic methods
- c) Infant cry analysis- characteristics of normal and abnormal cries, models, infant cry as a tool for early identification of high-risk babies
- d) Speech synthesis and its applications: articulatory, parametric synthesis and analysis by synthesis

Recommended Reading

- Borden, G. J., & Harris, K. S. (2011). Speech Science Primer, Philadelphia. Lippincott, William &Wilkins.
- Ferrand, C. T. (2007). Speech Science – An Integrated Approach to Theory and Practice.2nd Edition, Boston, Allyn&Bacon.
- Hixon, T. J., Weismer, G., &Hoit, J. D. (2014).Preclinical Speech Sciences; Anatomy Physiology Acoustics Perception.San Diego, PluralPublishing.
- Hollien, H. (2002). Forensic Voice Identification. NY, Academic PressInc.
- 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, BlackWell
- Raphael, L. J. (2007). Speech Science Primer.Philadelphia, Lippincott Williams & Wilkins.
- CIIL Publications on the production of sounds in different languages of India

SLPS 104: Clinical Linguistics and Multilingual Issues

Marks-100

64 Hours

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

- a) Understand aspects of clinical linguistics relevant to speech-language pathology,
- b) Discuss the acquisition process and related disorders pertaining to various components of language,
- c) Discuss general concepts, theoretical background and issues related to socio-linguistics,
- d) Discuss the multilingual and multicultural issues in rehabilitation with reference to India and
- e) Undertake research in the area of clinical linguistics related and relevant to speech- language pathology.

Unit1: Introduction to clinical linguistics; Phonological, Semantic and syntactic acquisition and related disorders

- a) Introduction to clinical linguistics and scope of linguistics in clinical field.
- b) Principles of general linguistics and their clinical relevance.
- c) Phonological acquisition and disorders
- d) Semantic acquisition and disorders
- e) Grammatical acquisition and disorders

Unit 2: Pragmatics and sociolinguistic concepts

- a) Pragmatics – Theoretical background: Discourse, deixis, anaphora, maxims and truth relations
- b) Discourse comprehension
- c) Discourse analysis/Narrative analysis in neurotypical adults and persons with disorders
- d) Development of pragmatics in children
- e) Pragmatic disorders with respect to some clinical disorders
- f) 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, language efficiency)

Unit 3: Psycholinguistics and language acquisition

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

Unit 4: Neurolinguistics

- a) Introduction to neurolinguistics
- b) Language and lateralization – left brain and right brain differences
- c) Coding and decoding
- d) Neuroanatomical and neurophysiological bases of language learning and dysfunction
- e) Mechanism and bases of recognition of spoken and visual word, sentence processing and discourse comprehension.

Unit 5: Multilingual and multicultural issues in communication

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

Recommended Reading

- Allan, B. (2014). The guidebook to sociolinguistics. UK: Wiley Blackwell.
- Ball, M., J., Perkins, M., R., Müller, N. & Howard, S. (2008). The handbook of clinical linguistics. (Eds). Oxford: Blackwell Publishing.
- 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.

SLPS 105: Clinical Psychology

Marks-100

64 Hours

Objectives

- Understanding the utility of Clinical Psychology from Speech and Hearing Perspective
- Understanding normality, abnormality and categorization of abnormal behavior
- Understanding developmental milestones: Cognitive, Motor, Emotional and social
- Learning theories and its application to Speech Language Pathology
- Usefulness of Neuropsychology in the field of Speech Language Pathology

Unit 1: Overview to Psychology

- Clinical Psychology and Historical Development
- Disciplines of Psychology
- Importance of Clinical Psychology in Speech language pathology
- Notions of Normality and Abnormality
- Biological, Psychological and Social models of Mental Disorders

Unit 2 Evaluation in Clinical Psychology

- Clinical Examination: History taking, Interview, Observation, and Differential Diagnosis
- Evaluation of Cognitive, Adaptive, Personality and Behavioural aspects.
- Classification of Diseases and Disorders: History and current classifications based on DSM and ICD

Unit 3: Psychology and growth

- Process and Philosophy of development and maturation of a child
- Motoric development across agespan: childhood, adolescence, adulthood and gradual elderly.
- Emotional and Social development
- Theories of cognitive development (Piaget's Theory), Cognitive Development across age span: Early childhood to adolescence, age related changes on cognition

Unit 4: Behavior and Learning

- Learning theories: A brief introduction
- Concept of conditioning: Pavlov's Classical Conditioning and Skinner's Operant Conditioning
- Treatment techniques using learning theories: Skill based techniques and problem-based techniques
- Scope of learning in the field of communication disorders

Unit 5: Speech language pathology and neuropsychology

- Fundamentals of neuropsychology
- Evaluation and rehabilitation based on neuropsychology principles
- Relevance of neuropsychology in the field of Speech Language Pathology
- Counseling: A brief Overview and features of a good counselor

References

- Morgon C.T., King R.A., Robinson N.M.(1997). Introduction to Psychology. Tata McGrawHill Publishing Co.
- Anastasi, A (1990). Psychological tesing, London: Freema
- Baura, M. (2004). Human Development and Psychology, Rehabilitation Council of India, New Delhi. ISBN:81-7391-868-6
- Coleman J.C. (1984). Abnormal Psychology and Modern Life, Pearson Scott Foresman
- Gregory, R.J. (2000). Neuropsychological and Geriatric Assessment in Psychological Testing: History, Principles, and Applications (3rd ed.). New York: Allyn & Bacon
- Hurlock, E.B. (1981). Child development. (VI Ed.). Mc Graw Hill International BookCo
- Kline, P. (1993). The Handbook of Psychological Testing. Routledge
- Lezak, M., Loring, D.W., and Hannay, H.J. (2004). Neuropsychological Assessment.Fourth Edition. New York: Oxford University Press
- Siegal M.G. (Ed). (1987). Psychological Testing from Early Childhood Through Adolescence. International Universities Press
- DSM – IV 4th Ed. (1995). Jaypee Brothers, New Delhi

SLPS 106: Language and Literacy Disorders

Marks-100

64 Hours

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. Concepts related to reading and its acquisition – Decoding, reading accuracy, reading fluency, reading comprehension;
- b. Differences among writing systems for languages; Importance of phoneme-grapheme correspondence for reading
- c. Foundations for development of reading in languages with different writing systems (Phonological processing, phonological awareness, orthographic skills, visual processing skills, oral language skills);
- d. 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)
- e. Stages of reading and writing development – emergent literacy to proficient reading comprehension; Models of reading development in English /alphabetic script and other writing systems.

Unit 2: Disorders Related Language and Literacy

- a. Definition and differences among underachievement in school, learning disability, reading disability, dyslexia, dysgraphia, dyscalculia, language learning disability, language impairment/specific language impairment; DSM V and ICD 10 classifications; challenges in use of classifications.
- b. Linguistic characteristics of students with reading/language/learning disabilities
- 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

- a. Screening of children for language disorders in schools; Standardized tests to assess language and (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. Specific assessment tools for learning disability in India (e.g., NIMHANS battery, Dyslexia Assessment for Languages in India and other published tests)

- d. Informal assessment of different domains – Tasks and stimuli in specific languages for phonological awareness, orthographic skills, phonological processing, oral language skills etc.
- e. Brief overview of assessment of associated areas (auditory processing, visual processing, memory etc.)

Unit 4: Evidence based Intervention for Literacy Development

- a. Intervention approaches to promote emergent literacy
- b. Intervention approaches to promote decoding and early reading skills
- c. Intervention approaches to promote development of reading comprehension
- d. Intervention approaches to promote spelling and written language output
- e. Research on cross-linguistics issues in intervention; intervention for children with Bilingual / multilingual background and reading intervention

Unit 5: Issues related to Service Delivery and Related Laws/Policies

- a. Modes of service delivery for school-aged children (clinical, consultative, collaborative, language-based classroom, peer-mediated)
- b. Team members working with children with literacy disorders; Response to Intervention– tiers and their role in instruction for poor readers; role of SLP in Response to Intervention
- c. 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).
- d. Dyslexia associations/groups in India

Recommended Reading

- C. A. Stone, E. R. Silliman, B. J. Ehren, & G. P. Wallach (Eds.), (2016). *Handbook of language and literacy: Development and disorders* (2nd ed.), pp. 339-357. New York, NY: Guilford Press.
- Clarke, P. J., Truelove, E., Hulme, C., & Snowling, M. J. (2013). *Developing reading comprehension*. John Wiley & Sons.
- 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.
- 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.
- Turnbull, K. L. P., & Justice, L. M. (2011). *Language development from theory to practice*. Pearson Higher Ed.
- Hulme, C., & Snowling, M. J. (2009). *Developmental disorders of language learning and cognition*. John Wiley & Sons.
- Cabell, S. Q., Justice, L. M., Kaderavek, J., Pence, K. L., & Breit-Smith, A. (2008). *Emergent literacy: Lessons for success*. Plural Publishing.
- Justice, L. M. (2006). *Clinical approaches to emergent literacy intervention*. Plural Publishing.

SLPS 107 Technology for Speech-Language Pathology

Marks-100

64 Hours

Objectives

- Trends in the current technology in speech Acoustics, Signal processing, Instrumentation etc.
- Knowledge of the equipments and the working principles used in diagnostics and therapeutics in Speech Language Sciences and Pathology
- Fundamentals of ICT (Information and Communication Technology) concepts and illustrate the applications of ICT in Speech & Language Sciences & Pathology

Unit 1: Instrumentation for signal processing

- Fundamental principles in the working of microphones: Dynamic, condenser and electrets microphones
- Characteristics of microphones for signal processing and recording
- Structure and Working principles of Loudspeakers: Dynamic, Moving Coil and Balanced Armature type receivers
- Functions of preamplifiers and power amplifiers
- Need of different types filters and their usefulness in power supply
- Basic knowledge of type of power supply and the instrumentation
- Overview to Uninterrupted Power Supply (UPS)

Unit 2: Fundamentals of Digital Signal Processing and ICT (Information & Communication technology).

- Fundamentals of digital signal processing
- Conversion of Signals from Analog to Digital mode.
- Conversion of Signals from Digital to Analog mode.
- Fundamentals of Decomposition, Processing and Synthesis of a digital signal
- Signal processing using DSP

Unit 3: Role of Information technology

- Fundamentals on computers: Types and its parts
- Functions of OS, RAM & Hard disk
- Computer networks
- Basic structure of Satellite communication
- Concept on world wide web and internet connectivity
- Tele-diagnosis & tele-rehabilitation in SLP.

Unit 4: Speech signal processing

- Representing a speech signal in time domain, frequency domain and Short time speech analysis.
- Speech Analysis techniques: LPC, Cepstrum,
- Concepts on Speech and speaker recognition, Speech synthesis and Speech to text conversion.

Unit 5: Instrumentation in Speech -Language

- Computerized Speech Laboratory
- Systems for Voice analysis, Electroglottograph
- Articulography
- Nasometer
- Stroboscope
- Guidelines for voice recording room
- Fundamentals of imaging technology: X-Ray, CT scan, MRI and FMRI.

References

- Crocker, M.J. (1998). Handbook of Acoustics, New York: John Wiley & Sons, Inc.,
- Rossing, T.D. (2002). The Science of Sound (3rd Edn.), Glenview: Pearson Education, Inc.,
- Nagpal, D. P. (2009). Computer Fundamentals: Concepts, Systems and Applications. New Delhi: S. Chand and Company.
- Malvino, A. P. (1979). Digital Computer Electronics. Bombay: Tata McgrawHill.
- Kennedy, B. (1993). Electronic Communication Systems. (4th Edn). Bombay: Tata McgrawHill.
- Tan, Li Jiang. (2013). Digital Signal Processing: Fundamentals and Applications (2nd Ed.) New York: Academic Press Inc.
- Kent, R. D. (1995). The Acoustic Analysis of Speech, Delhi: AITBS Publishers, Inc.
- Khandpur, R.S. (1993). Hand Book of Bio-Medical Instrumentation. Bombay: Tata McgrawHill

II Semester

SLPH 201: Language Disorders in Children

Marks-100

64 Hours

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

- a) know various theories and models of language acquisition in monolingual /bi/ multilingual children,
- b) describe developmental and acquired language disorders in children,
- c) discuss issues related to differential diagnosis and assessment of child language disorders,
- d) describe various management approaches for child language disorders, and
- e) critically evaluate research articles in the area of child language disorders

Unit 1: Theories of Language Acquisition

- a) Critically evaluate theories of language acquisition- biological maturation, linguistic, cognitive, information processing and social theory - implications of theories for assessment and intervention)
- b) Types of bi / multilinguals; Nature of bi/multilingualism in India;
- c) Language acquisition in bilingual / multilingual / atypical children
- d) Normal process of second language acquisition
- e) Variables in second language acquisition: cognitive-linguistic and affective

Unit 2: Classification of language abnormalities based on etiology

- a) Genetic and chromosomal abnormalities
- b) Motor and sensory deficits
- c) Language disorders associated with pre-maturity and or high risky infancy
- d) Prenatal exposure to alcohol and other drugs
- e) Intellectual disabilities
- f) Acquired language disorders: causes, incidence and prevalence of acquired language disorders globally and in India; defining characteristics - cognitive communication deficits
- g) Specific Language Impairment - causes, incidence and prevalence of primary language disorders/ specific globally and in India and defining characteristics, differential diagnosis - cognitive communication deficits

Unit 3: Autism Spectrum Disorders / Pervasive Developmental Disorders

- a) Introduction and classification (ICD10; DSMV)
- b) Etiology, warning signs, defining characteristics, incidence and prevalence of Autism – national and international
- c) Symbolic abilities and social aspects of communication
- d) Language outcome in autism management – theoretical issues
- e) Theory of mind – second order representation
- g) Other diagnosis on the autism spectrum and associated disorders
- h) Assessment and diagnosis of autism spectrum disorders- norm-referenced and criterion referenced tools; checklists and informal assessment tools used in India (ASIA, MISIC, INCELN tool etc.) and globally

- i) Prognosis and treatment – applied behavioral analysis, peer mediated interactions, floor time / developmental individual difference relationship-based model, social- communication, emotional regulations abilities and transactional supports, responsive teaching, relationship development intervention, Hanen approach, Treatment and Education of Autistic and Related Communication Handicapped Children, Picture exchange communication system, Com-DEAL and diet management.

Unit-4 Attention Deficit Hyperactivity Disorder

- a) Introduction and classification (ICD 10, DSMV)
- b) Causes, incidence and prevalence of ADHD globally and in India
- c) Characteristics of different types
- d) Relationship of ADHD to language and or learning disabilities
- e) ADHD and other labels, adolescents with ADHD
- f) Assessment and diagnosis of ADHD - norm-referenced and criterion referenced tools; checklists and informal assessment tools used in India and globally
- g) Treatment of ADHD- areas of treatment – communication deficits academic issues, memory deficits, behavioral, medical and social issues

Unit 5: General Consideration in the Assessment and Management of Child Language Disorders

- a) Critical review of developmental scales and norm-referenced tools for language development for Indian languages
- b) Differential diagnosis of child language disorders
- c) General principles and approaches to management in child language disorders.
- d) Evidence-Based Practice and Response-to-Intervention in child language disorders
- e) Team approach, guidance and counseling
- f) Presence of comorbid features like swallowing / apraxia etc. and their assessment
- g) Parent empowerment/ Parent implemented intervention for language delay/disorders
- h) Use of AAC in the management of child language disorders
- i) Rights of children with language disability

Recommended Reading

- Bhatia, T. K. & Ritchie, W. C. (2014). Handbook of Bilingualism and Multilingualism. 2nd Ed. East Sussex, WileyBlackwell.
- 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.
- Kaderavek, J. N. (2015). Language Disorders in Children: Fundamental Concepts of Assessment and Intervention. 2nd Ed. USA, Pearson Education Inc
- Nelson, N. W. (1998). Childhood Language Disorders in Context: Infancy through Adolescence. 2nd Ed. USA: Allyn & Bacon Inc.
- 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. & Norbury, C. (2012). *Language disorders from infancy through adolescence: Listening, speaking, reading, writing, and communicating* (4th Ed.). St. Louis, MO: Elsevier.
- Vinson, P.B (2012). Language disorders across life span, Delmar, Cengage learning

SLPH 202 Voice: Science and Disorders

Marks – 100

64 Hours

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

- a) Understand the bio-mechanics of voice production in normal individuals and in those with voice disorders,
- b) Explain and assess the roles of breathing mechanism, vocal fold vibration, vocal tract resonance and enunciation in voice production,
- c) Delineate the varying roles and responsibilities of a slp in a trans-disciplinary (medical) team to assess and treat voice disorders in children, adults, geriatrics and specific population including professional voice users, and
- d) Appraise different service delivery models and procedures to run a voice clinic

Unit 1: Voice Science

- a) Vocology – scope and objectives
- b) Breathing and voicing: lungs and airways, breathing mechanism as an interactive sound generating system: breathing oscillator & valving oscillator, combining the breathing and valving oscillators with voicing
- c) Vocal folds and voice: Biology of vocal fold tissue and lamina propria, muscular properties and vocal behaviours, biomechanics and voice control/modulation, voice fatigue, vocal injury and recovery, wound healing
- d) Resonance and voice: concepts of acoustic impedance, reactance, inertance, and compliance, acoustic impedance of the vocal tract, the effect of vocal tract reactance on self-sustained vocal fold oscillation, idealized vocal tract shapes and voice quality, modulating phonation with articulation and prosody

Unit 2: Voice Assessment and Voice Disorders

- a) Vocometry: assessing vocal ability: principles, methods and procedures: General assessment principles, evaluation procedures, tools of measurement, purpose of measurement, measurement scales, auditory perceptual evaluation- speech breathing, voice quality, resonance, and overview of instrumentation for voice assessment: visualization techniques, acoustic analysis, aerodynamic analysis, glottography, nasometry and electromyography
- b) Voice disorders: issues in definition, incidence and prevalence, occupational risks and voice disorders
- c) Classification of voice pathologies, characteristics and pathophysiology: Structural, neuropathologic, idiopathic, functional/behavioral - pathologies related to mechanical stress, tissue elasticity, fluid transport, airway environment and abnormal muscle activation
- d) Voice disorders in specific populations: Laryngectomy, pediatric voice disorders, aging voice, professional voice, vocal cord dysfunction/paradoxical vocal fold motion, transgender and transsexual voice

Unit 3: Voice Habilitation

- a) Voice management team, roles and functions
- b) Pharmacological and surgical effects on voice: Current trend in medical and surgical management: Medications for bacterial and other infections, allergies, edema, pain, asthma, cough, gastric and laryngopharyngeal reflux, stage fright, spasmodic dysphonia, mood conditions, sleep disturbance, hormone imbalances, etc. Voice surgeries – pre- operative and post-operative care and precautions
- c) Voice habilitation: Current views and approaches; EBP for voice and its disorders; Voice therapy methods for children and adults.
- d) Voice exercise principles and procedures: Physiological voice therapy methods Vs. Behavioral voice therapy methods, role of vocal hygiene and voice rest, basics of exercise physiology, general principles, types of exercises, exercise prescription and progress, vocal exercise techniques – vocal function exercises, resonant voice exercise, confidential voice therapy, and other voice exercises including psychological approaches, relapse and restoration
- e) Habilitation of persons with laryngectomy: Speech and medical considerations in laryngectomy, voice restoration in laryngectomees, counseling and quality of life

Unit 4: Voice Needs and Problems in Professional Voice Users

- a) Vocal professionals and voice disorders: classification, pathologies affecting voice – frequency, personal and social impacts, occupational hazards and issues, nature of voice problems: repetitive strain injuries, acute injuries and chronic problems – presentation, assessment and treatment
- b) Laryngeal rest, modified voice rest/conservative voice use, vocal hygiene; laryngeal rest versus exercise: effects on wound healing, general wound healing processes
- c) Voice habilitation for singers and other elite vocal users: Demands on voice, nature of vocal training and use, voice fatigue and assessment, basic principles of motor learning, awareness training, and vocal exercises, concept of professional voice care team – role of medical and non-medical team players
- d) Voice habilitation for teachers: voice problems in teachers: nature and manifestation, use of voice in classroom and factors influencing, vocal loading and assessment, vocal fatigue, techniques to improve the speaking voice and delivery, voice projection techniques, vocal education and counseling

Unit 5: Service Delivery and Other Professional Issues

- a) Scope of practice in the area of voice – training in endoscopy, documentation, telepractice – trends across globe and in India (practice guidelines, technical reports, position statements, knowledge and skills document relevant to voice as per RCI, ASHA, European Laryngological Society, and other relevant professional/statutory body). Issues in adopting and implementing the same in India.
- b) Patient compliance and concordance to voice management: Relevance of voice problems/voice problems as a public health concern, measuring severity of voice condition, measurement of compliance to management options, treatment variables and effects, patient-clinician interactions, socio cultural and economic considerations
- c) Voice clinics: SLP led clinics Vs. SLP in a medical team, space and other infrastructural requirements, specialty clinics considering needs of specific population such as singers, transgenders, transsexuals, non-native speakers, broadcasters, etc.
- d) Research and ethics in clinical practice: overview of basic and applied research in voice, ethics in clinical research, informed consent, clinical trials, methods to popularize services- roles of associations, conferences, working groups, awareness movements/drives like world voice day, camps, public awareness programs, role of media, prevention of voice problems.

Recommended Reading

- American Speech-Language- Hearing Association. (2004a). Vocal tract visualization and imaging: Position statement. Available from www.asha.org/policy.
- American Speech-Language- Hearing Association. (2004b). Vocal tract visualization and imaging: Technical report. Available from www.asha.org/policy.
- Behrman, A. (2013). Speech & Voice Science (2nd Ed.). San Diego: Pluralpublishers.
- Hixon, T. J., Weismer, G., & Hoit, J. D. (2014). Preclinical Speech Science: Anatomy, Physiology, Acoustics, Perception (2nd Ed.). San Diego: Pluralpublishers.
- Sapienza, C.M., & Ruddy, B. H. (2013). Voice Disorders. (2nd Ed.). San Diego: Plural publishers.
- Sataloff, R. T. (2006). Vocal Health & Pedagogy: Advanced Assessment and Treatment. Vol. II. (2nd Ed.). San Diego: Pluralpublishers.
- Sataloff, R. T. (2006). Vocal Health & Pedagogy: Science and Assessment. Vol. I. (2nd Ed.). San Diego: Pluralpublishers.
- Sataloff, R. T. (2005). Voice Science. San Diego: Pluralpublishers.
- Scope of practice document – SLPA (2015) – Rehabilitation Council of India
- Stemple, J. C., Glaze, L. E., & Gerdeman, B. K. (2014). Clinical Voice Pathology: Theory & Management (5th Ed.). San Diego: Pluralpublishers.
- Titze, I. R., & Verdolini Abbott, K. (2012). Vocology: The Science and Practice of Voice Habilitation. Salt Lake City: National Center for Voice and Speech.

SLPH 203: Advances in Speech Sound Disorders

Marks – 100

64 Hours

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

- a) Describe recent theories and concepts related to phonological development and its disorders,
- b) Diagnose and manage children with speech sound disorders,
- c) Provide comprehensive care including speech therapy for persons with Cleft Lip and Palate as a member of the cleft palate team, and
- d) Guide and counsel families of children with Cleft Lip and Palate

Unit 1: Phonological Development and Disorders

- a) Recent concepts in theories of phonological development: Generative phonology, natural phonology, non-linear phonology, optimality theory
- b) Application of phonological theories in evaluation and management of phonological disorders
- c) Co-articulation – Types (anticipatory, carryover); Models of co-articulation - feature based, syllabic, allophonic, target, physiological and degree of articulatory constriction models); Physiological / Acoustical / Perceptual studies of co-articulation
- d) Current concepts in taxonomy of speech sound disorders in children

Unit 2: Assessment and Management of Children with Phonological Disorders

- a) Comprehensive phonological assessment procedures – Formal and informal; Independent and relational analyses; dynamic assessment
- b) Assessment of phonological awareness and phonological processing in children with speech sound disorders
- c) Critical appraisal of test material in Indian context - Specific issues in phonological assessment in multilingual environments
- d) Determining need for intervention and intervention decisions

Unit 3: Management of Children with Speech Sound Disorders

- a) Evidence based approaches to intervention – Motor based approaches, linguistic based approaches; use of non-speech Oro-motor activities
- b) Motor learning principles – applications to interventions
- c) Considerations in intervention: methods to measure clinical change and determining progress in therapy and generalization
- d) Specific considerations in intervention within multilingual contexts.
- e) Use of software applications (Apps) in intervention; Use of tele-health for intervention of speech sound disorders

Unit 4: Cleft Lip and Palate

- a) Phonological development in children with CLP
- b) Development of other language attributes (morphology, semantics, syntax, pragmatics)
- c) Velopharyngeal Closure- normal physiology, parameters affecting velopharyngeal closure and nature of velopharyngeal dysfunction in persons with CLP
- d) Perceptual assessment protocols for speech characteristics in children with repaired CLP
- e) Instrumental assessment of velopharyngeal closure- Imaging techniques, acoustic measurements, aerodynamic measurements

Unit 5: Management of Persons with CLP

- a) Surgical, orthodontic and prosthodontic management in CLP.
- b) Early intervention for children with CLP – Methods and studies related to efficacy
- c) Speech and language therapy for persons with velopharyngeal dysfunction
- d) Current evidence based practices in assessment and management of CLP

Recommended Reading

- Bernthal, J.E., Bankson, N.W., &Flipsen, P. (2013). Articulation and phonological disorders (7th Ed.).Boston, MA:Pearson.
- Dodd, B. (2013). Differential diagnosis and treatment of children with speech disorder (2nd Ed). NJ:Wiley.
- Vasanta, D. (2014). Clinical applications of phonetics and phonology.ISHAMonograph.Vol 14, No. 1.Indian Speech & HearingAssociation.
- Velleman, S. L (2003). Resource guide for Childhood Apraxia of Speech.Delmar/ThomsonLearning.
- Williams, A., McLeod, S., &McCauley,R. (2010). Interventions for speech sound disorders in children. Baltimore:Brookes.

SLPS 204: Dysphagia

Marks – 100

64 Hours

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

- a) Understand the neuroanatomical and neurophysiological bases of normal and abnormal swallowing in children and adults,
- b) Appreciate the varying roles and responsibilities of a SLP in a interdisciplinary team to assess and treat swallowing disorders across the lifespan (neonates, infants, children, adults and geriatrics),
- c) Appraise different service delivery models, and
- d) Understand ethical, cultural and professional considerations in the management of dysphagia.

Unit 1: Neuroanatomical and Neurophysiological Bases of Swallowing

- a) Structures involved in three phases of swallow and peripheral nervous system control of mastication and swallowing (anatomy & physiology of three phases & cranial nerve innervation)
- b) Central nervous system control for mastication and swallowing
- c) Etiologies for dysphagia in adults (structural anomalies, neurological conditions, mechanical & motility)
- d) Age-related changes in eating & swallowing.

Unit 2: Assessment of Swallowing and its Disorders

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

Unit 3: Management of Dysphagia in Adults

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

Unit 4: Pediatric Dysphagia

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

Unit 5: Service Delivery and Other Issues Related to Management

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

Recommended Reading

- Groher, M. E., & Crary, M. A. (2015). Dysphagia: clinical management in adults and children. Elsevier Health Sciences.
- Logemann, J.A. (1998). Evaluation and treatment of swallowing disorders. Second Edition. Pro-Ed. Austin, Tx.
- Fraker, C., & Walbert, L. (2003). Evaluation and treatment of pediatric feeding disorders: From NICU to childhood. Speech Dynamics.
- Cichero, J. A., & Murdoch, B. E. (Eds.). (2006). Dysphagia: foundation, theory and practice. John Wiley & Sons.
- Arvedson, J. C., & Brodsky, L. (2002). Pediatric Swallowing and Feeding: Assessment and Management. (2nd Edition). Canada, Cengage Learning.

SLPS 205: Suprasegmentals and Musical Acoustics

Marks – 100

64 Hours

Objectives

- Types of suprasegmentals and their characteristics, models of intonation, rhythm, and stress, and various scales of music
- Methods of research to study suprasegmentals
- Neural basis of suprasegmentals and dysprosody in various communication disorders
- Knowledge on acoustics of Music

Unit 1: Introduction to suprasegmentals, components of prosody

Basics on suprasegmental – Definition, components (stress, intonation and rhythm)

Stress – Definition, characteristics, level and types (level stress, crescendo stress, diminuendo stress, crescendo-diminuendo stress, word stress, bound stress phonemic stress, morphological stress, sentence stress, primary stress, contrastive stress, emphatic stress), Concept and classification of languages into stressed and syllable timed languages.

Development of stress perception and generation. Perceptual, acoustic and physiological mechanisms/correlations of stress; measurement of stress, mechanical recognition, computer aided recognition. Changes in stress at perceptual, syntactic lexical and pragmatic domains.

Unit 2: Intonation

Intonation – Fundamentals, components of intonation, concepts on -tones, pitch phonemes, and movements of pitch and its levels, configurations and nuclear tone, pitch accents, phrase tones and boundary tones, and intonation groups and other boundary markers.

Models in intonation- the British school, the American school, the Lund school, the Dutch school, Phonological models, acoustic phonetic models, Gronnum's model, Lund intonational model, super positional intonation model, Bell labs intonation model. Aspects of Intonation as per generative grammar and nonlinear phonology.

Analysis of intonation - levels versus configuration, intonation pattern structure.

Intonation functions (lexical, phrasal and sentential, discourse and dialogue).

Acquisition of intonation: Neurological and Physiological control, Physiological correlate of intonation pattern. Tonal languages -basic characteristics, transcription of tones, contrastive tones, register tone language, contour tone language, illustration of tonal language. Tone Sandhi

Application of intonation in speech synthesis, speech recognition/verification, language identification, educational application, prosodic and foreign language training, and enhancing the feedback for the hearing impaired.

Tennessee Test of Rhythm and Intonation Pattern (T-TRIP), synthetic test of intonation pattern, Effect of Hearing impairment, neurological lesions and other pathological conditions on Intonation.

Rhythm – Fundamentals, Rhythm development, models of rhythm-comb model, chain model, isochrony foot model. Tests of rhythm, T-TRIP test, synthetic test of rhythm, rhythm in Indian and other Non-Indian Languages.

Rhythm class hypothesis: Overview and analysis.

Pair-wise Variability Index (PVI) to measure rhythm, rhythm in pathological population.

Unit 3: Neural Foundations of Suprasegmentals

Neural correlates of suprasegmentals, Dysprosody-types and causes.

Processing of Prosody- Functional localization hypothesis, Differential cue lateralization hypothesis (RH Hypothesis, F0 hypothesis and supporting studies), and hemispheric lateralization.

Unit 4: Suprasegmentals and Communication Disorders

1. Suprasegmental features in various communication disorders:
 - a) Hearing Impairment – pitch and voicing control, pauses and pitch range
 - b) Suprasegmentals in Sensorimotor Disorders: Apraxia of Speech, Dysarthria (flaccid dysarthria, spastic dysarthria, unilateral UMN dysarthria, ataxic dysarthria, hyper kinetic dysarthria, hypo kinetic dysarthria, mixed dysarthria, amyotrophic lateral sclerosis, Wilson's disease, multiple sclerosis,
 - c) Suprasegmentals in Childhood Language Disorders- Autism Spectrum Disorders and Specific Language Impairment
 - d) Suprasegmental aberrations in stuttering,
2. Multicultural/Multilingual influences on prosody

Unit 5: Musical Acoustics

Introduction, definitions, historical development of Indian music

Musical Components – Scale, Melody, Rhythm, Tonality, Harmony, Tuning, Temperament and Intonation

Scales of Music –Intonation / Just diatonic / Musical diatonic /Pythagorean, Mean tone temperament/Quarter – Common Mean tone temperament/scale of pitch sensation, Equal temperament scale, Comparison of scales.

Physiology of musical singing– Fundamentals, physiological factors, Breath management in singing, Respiratory, Phonatory and Articulatory basis for singing, singing formants

Basics of singing – Humidity, noise, speaker-listener distance, stance / posture, breathing support, laryngeal position, jaw position, tongue position, perception, and artistic variations.

Influence of aging on musical singing- Physiological and acoustic evidence

Vocal Pathology in Singers – Overview on prevention and care of singer's voice. Warm up exercises for singing.

References

- Funded research projects reports in AIISH Library and information center.
- Johns – Lewis, C. (1986) Intonation in discourse. San Diego: College –Hill Press, Inc.
- Phonetica (2009) – Speech issues on speech rhythm.
- Leeuwen, T. V. (1999). Speech, music and sound. Hong Kong: Macmillan Press Ltd.
- Bunch, M. A. (1982). Dynamic of singing voice. New York: Springer – Verlag/Wien.
- Proctor, D. F. (1980). Breathing, speech and song. New York: Springer – Verlag/Wien.

SLPCP 108 & SLPCP 206: CLINICAL PRACTICUM IN SPEECH LANGUAGE PATHOLOGY

Know how to:

- a) Perform acoustic analysis of speech including FFT, LPC, cepstrum and inverse filtering; acoustic analysis of vowels, diphthongs, plosives, nasals, fricatives, Affricates and other speech sounds using spectrograms on PRAAT
- b) Vowel synthesis using parametric and analysis by synthesis; demonstration of articulatory synthesis
- c) Observation of stroboscopic evaluation of persons with voice disorders as part of team assessment
- d) Observation of endoscopic examination of persons with cleft lip and palate as part of team assessment
- e) Differential diagnosis of conditions relevant to speech and hearing as per DSM-V and ICD 10 classifications

Demonstrate:

- a) Measurement of aerodynamic parameters using spirometer and instrumentation for aerodynamic analysis
- b) 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
- c) Carry out and interpret the acoustic measures of voice on two recorded samples and correlate with the perceptual analysis
- d) Complete perceptual analysis of speech samples of persons with CLP.
- e) Demonstration of therapy techniques for disorders of speech sound, voice, and fluency.
- f) 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
- g) Practice and learn to use finger spelling and signs for functional vocabulary
- h) Learn to operate AAC devices, aids and software

Do:

- a) Complete evaluation, write detailed evaluation report, counsel persons with communication disorder and their families as required for the following:
 - 1) five children with language disorders using appropriate tests/protocols: Autism Spectrum Disorders, Attention Deficit Hyperactivity Disorder (ADHD), cognitive impairment and global developmental delay.
 - 2) five persons with stuttering using standardized tests (SSI, SPI etc.), including assessment of rate of speech, type, percent of dysfluencies, and quality of life measures.
 - 3) five persons with voice disorders including perceptual assessment using different scales, acoustic analysis of voice and patient reported outcome measurement.
 - 4) 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.
- b) Plan and carry out appropriate intervention program for children and adults with voice and fluency disorders, children with language disorders and children with speech sound disorders.
- c) Plan and carry out intervention program for a child with language disorder using AAC

III – Semester

SLPH 301: Disorders of Fluency

Marks – 100

64 Hours

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

- a) Explain the nature, types and bases of fluency and its disorders,
- b) Discuss the theories and models of stuttering,
- c) Describe, diagnose and manage persons with different types of fluency disorders,
- d) Implement a team of professional for evaluation and management of fluency disorders,
- e) Counsel the clinical clientele, their family members and others to manage the problem, and
- f) Evaluate research output in the area of fluency and its disorders

Unit 1: Overview of Fluency and its Disorders

- a) Dimensions of fluency disorders- recent advances; Suprasegments
- b) Development of fluent speech: Factors affecting fluency of speech
- c) 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 neuro motor problem
- f) Stuttering as a timing disorder
- g) Feedback and feed-forward models of stuttering.

Unit 2: Types of Non-fluencies and Dysfluencies

- a) Normal non-fluency and developmental stuttering
- b) Cluttering- causes and characteristics
- c) Neurogenic, Psychogenic and other types of fluency disorders
- d) Stuttering in persons with multiple disability

Unit 3: Assessment of Fluency and Dysfluency

- a) Objective tools for assessment of fluency and its disorders
- b) Subjective and perceptual assessment
- c) Electrophysiology in the evaluation of fluency disorders
- d) Functional radiological studies of stuttering
- e) Cognitive dimension of stuttering
- f) Diagnosis and differential diagnosis

Unit 4: Management of Disorders of Fluency

- a) Spontaneous recovery and relapse
- b) Principles of therapy; skill training
- c) Approaches to management of fluency disorders in adults and children
- d) Group therapy
- e) Input from allied professionals in the management of fluency disorders
- f) Behavioral and work-place management

- g) Counseling - including parents and teachers
- h) Social help and advocacy groups
- i) Apps based and other innovative modes including telemode.

Unit 5: Recovery and Related Issues

- a) Relapse and recovery pattern in fluency disorders
- b) Efficacy and outcome measures of fluency therapy
- c) Evidence based practice
- d) Bilingualism / multilingualism relating to stuttering and cultural sensitivity
- e) Ethics in research and management of stuttering

Recommended Reading

- Bloodstein, O., & Ratner, N. B. (2008). A Handbook on Stuttering (6th Ed.). Clifton Park, NY, Thomson Demer Learning.
- Conture, E., Curlee, R., & Richard F., (2007). Stuttering and Related Disorders of Fluency. 3rd Ed. N Y, Thieme Publishers.
- Corder, Akingham, R.J. (1998): Treatment efficacy for stuttering. Singular Publishing Group, San Diego.
- Curlee (1993): Stuttering and related disorders of fluency. Thieme Medical Publisher, New York.
- Ham, R.E. (1990): Therapy of stuttering pre-school through adolescence. Prentice Hall, Englewood-Cliffs.
- Manning, W. H. (2010). Clinical Decision Making in Fluency Disorders. 3rd Ed. NY, Delmar Learning
- Myers, (1992): Cluttering. Kibworth, Far Communication.
- Onslow, M., & Packman, A. (1999). The Handbook of Early Stuttering Intervention. USA, Singular Publishing Group.
- Peters, H.F.M. and others (Ed.) : (1991). Speech motor control and stuttering. Excerpta medica, Amsterdam.
- Riley (1986). Stuttering severity instrument for children and adults. Pro. Ed. Austin.
- Rustin, L. and others (1996). Assessment and therapy for young dysfluent children. Whurr Publishers, London.
- Starkweather, C.W. and others (1990): Stuttering prevention. Englewood Cliffs, Prentice Hall.
- Webster, R. L. (2014). From Stuttering to Fluent Speech, 6300 Cases Later: Unlocking Muscle Mischief Create Space. South Carolina, Independent Publishing Platform
- Wells (1987). Stuttering treatment. Prentice-Hall, New Jersey.

SLPH 302: Neurogenic Speech Disorders

Marks – 100

64 Hours

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

- a) Describe the neuro-anatomical bases of speech motor control,
- b) Explain the models relevant to speech motor control, and
- c) Know the methods for assessment and management of neuro-motor speech disorders.

Unit 1: Neuroanatomical and Physiological Substrates of Speech Motor Control

- a) Review of neuroanatomical substrates of speech motor control- motor and sensory cortex, subcortical, cerebellar and brain stem structures and their pathways; cranial nerves and peripheral nervous system, types of mechanoreceptors and their topography in speech
- b) Early models of speech motor control: Closed Loop, Open Loop, Associative Chain and Serial Order Model, Schema Theory, Task Dynamic Model, Mackay's Model, Graco's Model,
- c) Recent Models of Speech Motor Control: DIVA Model
- d) Other speech control models related to development of speech motor control in children
- e) Age related changes in speech motor control

Unit 2: Assessment and Management of Dysarthria in Adults

- a) Perceptual methods: Rating scales and tests for speech parameters, prosody, speech intelligibility, comprehensibility and naturalness.
- b) Recent advances in use of aerodynamic and acoustic analysis of speech among persons with dysarthria
- c) Other physiological analyses of speech subsystems in persons with dysarthria
- d) Behavioral approaches for treatment of speech subsystems affected in persons with dysarthria
- e) Evidence based practice guidelines for management of dysarthria in adults

Unit 3: Assessment and Management of Dysarthria in Children

- a) Behavioral approaches to correct posture, tone, and strength and sensori-motor treatment techniques
- b) Specific behavioral approaches in developmental dysarthria: McDonald's Approach and Hardy's Approach
- c) Application of facilitatory approaches (neurodevelopmental approach and methods for reflex inhibition) in the management of developmental dysarthrias– evidence base for facilitatory approaches

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

- a) Assessment for suspected apraxia of speech, apraxia of speech and non-speech apraxia: Perceptual assessment protocols; physiological assessment of speech in adults with AOS
- b) Intervention methods for non-verbal apraxia's

- c) Intervention for AOS in adults: specific, programmed and nonspecific approaches – Evidence based practice
- d) Motor learning principles – applications in intervention of AOS

Unit 5: Assessment and Management of Childhood Apraxia of Speech (CAS)

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

Recommended Reading

- Burda, A. N. (2011). Communication and Swallowing Changes in Healthy Aging Adults. Chapter 7 & 8. MA, Jones & Barlett Learning.
- Murdoch, B. E. (2010). Acquired Speech and Language Disorders: A Neuroanatomical and Functional Neurological Approach (2nd Ed.). New Delhi, India: John Wiley
- 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.
- 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.
- McNeil, M. R. (2008). Clinical Management of Sensorimotor Speech Disorders (2nd Ed.). New York, NY, Thieme.
- Perkell, J. S., & Nelson, W.L. Sensorimotor Control of Speech Production: Models and Data. Cambridge, Massachusetts Institute of Technology.
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- Halpern, H., & Goldfarb, R. (2013). Language and Motor Speech Disorders in Adults (3rd Ed.). Chapters 8 and 9. MA, Jones & Barlett Learning.
- Love. R. J. (2000). Childhood Motor Speech Disability (2nd Ed.). USA, Allyn & Bacon.
- Manasco, M. H. (2014). Introduction to Neurogenic Communication Disorders. MA, Jones & Barlett Learning.
- Weismer, G. (2007). Motor Speech Disorders: Essays for Ray Kent. San Diego, Plural Publishing 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.

SLPS 303: Augmentative and Alternative Communication

Marks – 100

64 Hours

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

- a) identify and describe various approaches and methods used in augmentative and alternative communication (AAC),
- b) select appropriate AAC strategies and assessment procedures for individuals with complex communication needs,
- c) describe the treatment plan for implementation of AAC with evidence-based rationale,
- d) discuss the current status of the use of technology and practice of AAC for intervention 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) Team approach in AAC: Types, team members and their roles
- c) Aided systems and symbols in AAC: different types and their details
- d) Unaided systems and symbols in AAC: Different Types and their details
- e) Technology in AAC:
 - i) Communication Boards: Types
 - ii) Low and high tech aids & devices: Types, Interfaces

Unit 2: Assessment for AAC

- a) Assessment of AAC Candidates: Models for assessment
- b) Formal and informal assessment: Standard tests and scales
- c) Considerations in other domains - physical/ motor and seating requirements, cognition, vision and hearing, speech perception

Unit 3: AAC Intervention: Principles and Procedures

- a) General Principles and Strategies – Aided and unaided AAC
- b) Selection of vocabulary and symbol representation of the vocabulary: - types of vocabulary, factors affecting choice of vocabulary
- c) Strategies for selection of symbols in AAC, their types and factors affecting decision making: direct selection, scanning, encoding, word prediction
- d) Selection and decision making with reference to low and high tech aids and devices

Unit 4: Specific Intervention Strategies with Different Populations

- a) Specific intervention strategies for children with cognitive communication needs: (intellectually challenged, cerebral palsy, children with language disorders and children with dual and multiple disabilities).
- b) Specific intervention strategies for adults with cognitive communication need:
 - i) Temporary conditions: laryngectomy, voicedisorders
 - ii) Neurological conditions: Degenerative and non-degenerative conditions, Aphasia, traumatic brain injury
 - iii) Structural disorders and disorders affecting speech intelligibility
- c) Measuring outcomes in using AAC and evidence-based practices

- d) Specific intervention strategies for children with cognitive communication needs: (intellectually challenged, cerebral palsy, children with language disorders and children with dual and multiple disabilities).
- e) Specific intervention strategies for adults with cognitive communication need:
 - i) Temporary conditions: laryngectomy, voice disorders
 - ii) Neurological conditions: Degenerative and non-degenerative conditions, Aphasia, traumatic brain injury
 - iii) Structural disorders and disorders affecting speech intelligibility
- f) Measuring outcomes in using AAC and evidence-based practices

Unit 5: Contemporary Issues in AAC

- a) Use of technology: Hardware and software (applications) in intervention for children and adults with communication disorders
- b) Current status of AAC in India and scope for research
- c) Adaptation of AAC in different set ups: home, schools, work place, and other social situations
- d) Training in the use and application of AAC for parents and caregivers

Recommended Reading

- Beukelman, D., & Mirenda, P. (2012). *Augmentative and Alternative Communication: Supporting Children and Adults with Complex Communication Needs*, Fourth Edition. Baltimore: MD. Paul Brookes Publishing.
- Bryant, D. P., & Bryant, B. R. (2011). *Assistive technology for people with disabilities*. Pearson Higher Ed.
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- Lloyd, L., Fuller, D., & Arvidson, H. (1997). *Augmentative and alternative communication: Handbook of principles and practices*. Boston, MA: Allyn & Bacon.
- McNaughton, D. & Beukelman, D. R. (2010). *Transition strategies for adolescents & young adults who use AAC*. Baltimore, MD: Paul H. Brookes Publishing Co.
- Reichle, J., Beukelman, D. R., & Light, J. C. (2002). *Exemplary practices for beginning communicators: Implications for AAC*. Baltimore, MD: Paul H. Brookes Publishing
- Soto, G., & Zangari, C. (2009). *Practically Speaking Language Literacy & Academic Development for Students with AAC Needs*. Baltimore: MD. Paul Brookes Publishing.
- Mani, M. N. G., Gopalkrishnan, V., & Amaresh, G. (2001). *Indian Sign Language Dictionary*. Germany, CBM International.
- Vasishta, M., Woodward, J., & Desantu, S. (1980). *An Introduction to Indian Sign Language*. New Delhi: All India Federation of the Deaf.

SLPS 304: Community Based Rehabilitation

Marks – 100

64 Hours

Objectives

- Understanding the fundamental aspects of community-based rehabilitation
- Understanding the Rehabilitation principles and processes
- Importance of service delivery in CBR
- Awareness of welfare measures/schemes to persons with disability from public and private sectors
- Government and legal supports for persons with disability

Unit 1 – Introduction to community-based rehabilitation

- Fundamental principles and origin of Community Based Rehabilitation.
- Differences and similarities between community-based rehabilitation and institutional based rehabilitation
- CBR and its geographical variations (Rural/Urban/Tribal regions); CBR across variations in socio economic/cultural conditions
- Approaches of CBR for various disabilities (Single vs. Multiple)

Unit 2: CBR and Rehabilitation

- Education of children with hearing impairment and Intellectual Disability: Role of Speech Language Pathologists
- Organization of speech and hearing set-up for disability education
- Constituting community awareness programs and exhibitions for the stakeholder
- Team rehabilitation to school education

Unit 3: Role of Professionals in CBR

- Role of Accredited Social Health Activist (ASHA), Anganwadi Worker (AWW), Auxiliary Nurse Midwife (ANM) workers in CBR
- Universal Elementary Education: Sarva Shiksha Abhiyan (SSA)
- State/Central/NGO based Outreach centres
- Mainstreaming and Segregation: Open school, integrated schools and special schools.

Unit 4 – Welfare measures for Persons with Disabilities

- State and Central provisions for persons with disability
- Disability related schemes: Assistance to Disabled Persons for Purchase / fitting of Aids and Appliances (ADIP), Deen Dayal Rehabilitation Scheme (DDRS), Incentives to Private Sector Employers for providing employment to persons with Disabilities, Unique Disability ID and its benefits; District Disability Rehabilitation Centres (DDRCs), Scheme for Implementation of Persons with Disabilities (SIPDA), Scholarship scheme, National Fund for Persons with Disabilities, National Handicapped Finance and Development Corporation (NHFDC)
- National Awards for the Empowerment of PWD
- Placement agencies/Employment exchanges
- Insurance and Group insurance schemes

Unit 5 – Government hierarchies and legal provisions for persons with disability

- Ministries pertaining to disability: Ministry of Social Justice and Empowerment; Ministry of Labour and VRC's, MHRD
- Central & State: Chief Commissioners in disability
- State District functionaries (Commissioner, Director Disability Welfare)
- District & Block level committees
- Legal cells and Family courts
- Human Rights Commission
- Non-Government Organization (NGO) and their contributions

References

- Persons with Disabilities (Divyangjan) in India - A Statistical Profile: 2021
- Indian Journal of Disability and Rehabilitation, DEC Scheme, New Delhi-11.
- Mani MNG (2000) Inclusive education, Ramakrishna Vidyalaya, Coimbatore.
- Planning and Management of Integrated Education of Disabled Programme - A Hand Book for Administrators, Jangira N.K. Mukopadhyaya S, NCERT, New Delhi.
- Scheme of assistance to disabled for purposes of fitting of aids/appliances - Ministry of Social Welfare, Govt. of India, New Delhi.
- Scheme of assistance to Organizations for disabled persons, Ministry of Social Welfare, Govt. of India, New Delhi.
- Training disabled people in the Community -A manual on CBR for developing countries (RHB/83.1) by Einar Helander, Padmani Mendis and Gunnel Nelson, WHO, Distribution and Sales Services, 1211 Geneva 27, Switzerland
- Planning and management of NGOs- Dr.Indumathi Rao et al
- ABC of CBR-Indumathi Rao et al

IV- Semester

SLPH 401: Aphasia

Marks – 100

64 Hours

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

- a) Describe the history and classification systems in aphasias,
- b) Acquire skills in understanding the linguistic and non-linguistic impairments in aphasias,
- c) Acquire skills in differential diagnosis and assessment of different types of aphasias,
- d) Acquire skills in management of persons with aphasia, and
- e) Critically analyze scientific articles related to aphasia.

Unit 1: Aphasia: Neuroanatomical Basis and Impairments

- a) Neuroanatomical basis of major types of aphasias, key brain regions, aphasia case studies - lesion-deficit relationships, different types of agnosia.
- b) Classification of aphasic syndromes
- b) Phonological aspects of aphasia: sound structure of language: A theoretical framework; speech production; speech perception
- c) Lexical deficits in aphasia: functional architecture of the lexical system; aspects of the internal structure of the functional components
- d) 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 2: Assessment in Aphasia

- a) Formal and informal assessment tools both Indian and western their logic, purpose, test constructs, rationale, scoring, procedures and interpretation. Do's and don'ts in assessment procedures
- b) Methods for studying language and the brain- neuroimaging and cortical potentials electroencephalography, magnetoencephalography, positron emission tomography, functional magnetic resonance imaging, N400 and T-complex
- d) Differential diagnosis of different types of aphasia

Unit-3 Spontaneous recovery in Aphasia

- a) Anagraphical, neurological and Speech Language therapy and recovery
- b) Plasticity and recovery in aphasia: concepts of plasticity and recovery
- c) Prognostic factors; bio-chemical and physiologic mechanisms of recovery
- d) Structural mechanisms; behavioral mechanisms and language recovery in brain
- e) Link between plasticity, behavior and therapy; re-conceptualizing aphasia and aphasiatherapy
- f) Recovery pattern in monolingual, bi/multilingual aphasia

Unit 4: Disorders of Reading and Writing in Aphasia and Aphasia in Varied Population

- a) Introduction to acquired disorders of reading: dual route models; connectionist models
- b) Acquired alexia; assessment and intervention of acquired reading disorders
- c) Written language and its impairments: classification of written language disorders
- d) Neuroanatomical substrates of writing

- e) Assessment of writing disorders and intervention approaches to writing disorders
- f) Aphasia in bilinguals/multilingual population- definition and features
- g) Aphasia in illiterates, left handers and sign language users- definition and features

Unit 5: Management of Persons with Aphasia

- a) Introduction to language intervention strategies in adult aphasia
- b) Psychosocial/functional, traditional, specialized, life participation approach to aphasia, social approaches to aphasia, quality of life approach to aphasia, team and partnerships in aphasia intervention, treatment manuals in Indian context.
- c) Computer applications in the treatment of aphasia, tele-rehabilitation and constant therapy
- d) Treatment of swallowing, use of AAC in aphasia
- f) Medical aspects of rehabilitation and rights of persons with aphasia

Recommended Reading

- Ardila, A. (2010). A Proposed Reinterpretation and Reclassification of Aphasic Syndromes. *Aphasiology*, 24 (3), 363–394.
- Chapay, R. (2008). *Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders*. Philadelphia, Lippincott Williams & Wilkins.
- Davis, G.A. (2007). *Aphasiology - Disorders and Clinical Practice*. Boston. Pearson & Allyn & Bacon.
- 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
- Goswami, S. P. & George A. (2006). *ISH Amonograph. Adult Aphasia: Language Intervention*. A publication of Indian Speech and Hearing Association
- Goswami, S. P. (2012). *Disability Act and Dementias: Sociological issues*. Proceeding of the pre-conference continuing Education programme. A publication of the 44th ISHACON, Hyderabad.
- Papathanasiou, I. Coppens, P., & Potagas, C. (2013.). *Aphasia and Related Neurogenic Communication Disorders*. Burlington: Jones & Bartlett.
- Sarno, T.M (1998). *Acquired Aphasia*. San Diego: Academic Press.
- Ward, J. (2010). *The Student's Guide to Cognitive Neuroscience*. New York: Psychology Press

SLPH 402: Speech-Language Pathology in Practice

Marks – 100

64 Hours

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

- a) Know the role of a speech-language pathologist in different set-ups.
- b) Liaise with other professionals in setting-up an speech-language clinic.
- c) Audit speech-language practices in existing set-ups.
- d) Implement acts and legislations relating to persons with speech-language impairment,
- e) Advise Governments and other agencies on the formulation of policies and legislative acts relating to speech-language disability
- f) Understand the legal implications of practice in speech-language pathology.

Unit 1: Scope of Practice, Laws, Regulations and Professional Ethics

- a) Scope of practice in global and Indian scenario
- b) Professional ethics -
- c) Existing acts, legislations, policies related to persons with communication impairment
- d) Role of speech-language pathologists in the formulation of acts, regulations and policies
- e) Implementation of acts, legislations, policies and welfare measures relating to persons with speech-language impairment
- f) Advocacy groups, NGOs
- g) Rights of citizens
- h) National and international standards related to Speech-language pathology

Unit 2: Specialized Programs in Speech-language Pathology

- a) Need for specialized programs in Speech-language pathology: Geriatric and persons with multiple handicaps
- b) Other specializations (medical speech language pathology, forensic speech science)
- b) Health, wellness, and health care - Health promotion and disease prevention, quality of life and healthcare finances
- c) Disability-friendly environment including public education
- e) Culture and religion sensitive practice in speech-language practice
- e) Multilingual and multicultural sensitivity in therapeutics and management
- f) Prevention and early identification programs including societal participation

Unit 3: Service Delivery Models in Speech-language Pathology

- a) Services in different medical / rehabilitation/ research /educational set ups
- b) School based services pertaining to regular and special schools
- c) Community based practice in rural and urban areas
- d) Family empowerment programs
- e) Home based delivery of services
- f) Autonomous practice in speech-language pathology
- g) Services for other groups of professionals (professional voice users)

Unit 4: Tele-practice in Speech-language Pathology

- a) Information and communication technology in speech-language pathology practice
- b) Infrastructure for video-conferencing and tele-practice in Speech-language Pathology
- c) Techniques/principles of remote testing for screening and diagnostic assessment for speech-language, intervention and counseling
- d) Challenges and limitations of tele-practice in Speech-language Pathology in screening, assessment and evaluation, selection of aids and appliances, therapeutics and counseling.

Unit 5: Issues in Speech-Language Pathology Practice

- a) Entrepreneurship and planning to set up private practice/clinic for speech-language pathology practice: Clinical ethics
- b) Documentation in speech-language pathology practice: clinical / demographic data, database management and storage
- c) ICF framework for documentation / reports
- d) Quality control and auditing in speech-language pathology practice
- e) Documenting and implementing evidence based practice in speech-language pathology
- f) Understanding team approach: Work in cohesion with other professionals
- g) Information resources in speech-language pathology including books and journals, both electronic and print - Databases - Evidence based practice: Changed scenario

Recommended Reading

- Acts relating to disability, particularly hearing, enacted by the Indian Parliament.
- ASHA.2007. Scope of Practice in Speech-Language Pathology [Scope of Practice]. Available at: <http://www.asha.org/policy>.
- ASHA. 2009a. Audiology and Speech-Language Pathology Outside the United States. Available at: http://www.asha.org/members/international/intl_assoc.
- ASHA.2009b. Telepractices for SLPs and Audiologists. Available at: <http://www.asha.org/practice/telepractice>
- Cari M. Tellis, Orlando R. Baron (2015). Counseling and Interviewing in Speech- Language Pathology and Audiology
- College of Audiologists and Speech-Language Pathologists of Ontario.(2004). Use of Telepractice Approaches in Providing Services to Patients/Clients.
- David L. Irwin (2007). Ethics for speech-language pathologists and audiologists : an illustrative casebook
- Position paper Speech and language therapy in adult critical care. Royal college of Speech-language therapists. (2014), London
- Rizzo, S.R., & Trudeau, M.D. (1994). Clinical administration in audiology and speech language pathology. San Diego: Singular Publishing Group Inc.
- Rosemary Lubinski and Melanie W. Hudson. (2013), Professional Issues in Speech-Language Pathology and Audiology 4th Edition
- Sarah Ginsberg; Jennifer Friberg; Collenn F. Visconti (2011). Scholarship of Teaching and Learning in Speech-Language Pathology and Audiology
- Speech-Language Pathology Medical Review Guidelines (2015). American Speech-Language-Hearing Association
- Stephen, R.R., Jr., Trudeau, D.M. (Eds.) (1994). Clinical administration in audiology & speech language pathology. San Diego: Singular Publishing Group Inc.
- Todd K Houston (2013). Tele-practice in Speech-Language Pathology

- Trici Schraeder (2013). A Guide to School Services in Speech-Language Pathology 2ndEdition
- www.disabilityaffairs.gov.in (website of Department of Empowerment with Disabilities)
- www.rehabcouncil.nic.in (website of Rehabilitation Council of India)

SLPS 403: Cognitive-Communication Disorders

Marks - 100

64 Hours

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

- a) Describe various conditions in adults leading to cognitive communication disorders,
- b) Acquire skills in issues related to assessment of cognitive communication disorders,
- c) Acquire skills in management of cognitive communication disorders, and
- d) 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) Cognition- description of cognitive processes, mapping, mechanisms, concept, schema and properties
- b) Models of memory, cognitive-linguistics processes
- c) Cognitive communication disorders associated with TBI, disability following TBI- WHO- ICF classification, assessment and principles of cognitive rehabilitation of TBI
- e) Nature, assessment and management of various cognitive communication deficits in RHD

Unit 2: Dementia and Related Cognitive Disorders

- a) Neuropathology in Alzheimer's Disease (AD), evaluation and intervention of cognitive communication disorders in AD and other dementias
- b) Cognitive communicative aspects in primary progressive aphasia (PPA), evaluation and management of PPA
- c) Role of speech-language pathologist working with persons with dementia

Unit 3: Alcohol Induced Language Disorders and Metabolic Disorders of Language

- a) Cognitive communication deficits in alcohol induced and metabolic language disorders
- c) Assessment and management of body structure and function: quantifying and qualifying cognitive communication disorders of alcohol induced and metabolic disorders
- d) Assessment of swallowing in persons with cognitive communication disorders
- e) Differential diagnosis of cognitive communication disorders in adults

Unit 4: Physiology, Pathology and Cognitive Communication Changes in young ageing with Aging

- a) Theories aging, and age-related changes of the organ system, and cognition
- b) Psychological- death and bereavement, personality development and quality of life
- c) Physical changes and performance- range of motion, strength, endurance praxis, performance work
- d) Aging speech- voice, resonance and articulation and swallowing
- e) Language and cognitive aging: primary, secondary and tertiary aging factors

Unit 5: Ethno-Cultural Dynamics in Cognitive Communication Disorders and Cognitive Communication Approaches.

- a) Language as socio-cultural phenomena in aging
- b) Role of supportive relationships in cognitive communication disorders
- c) Cognitive communication approaches in rehabilitation
- d) Role of AAC in the intervention of cognitive communication disorders
- e) Team and partnerships in cognitive communication disorders
- f) Rights of persons with cognitive communication disorders

Recommended Reading

- Chapey, R. (2008). Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders. Philadelphia, Lippincott Williams & Wilkins.
- Chop, C. W & Robnett, H. R (2015.). Gerontology for health care professional. MA: Jones and Bartlett Learning Burlington.
- 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.
- Laura, L. M., & Heather, M. C. (2006). Neurogenic Disorders of Language: Theory Driven Clinical Practice. New York, Thomson Delmar Learning.
- Sarno, T.M (1998). Acquired Aphasia. San Diego, Academic Press.
- Papathanasiou, P. Coppens, & C. Potagas (2013), Aphasia and Related Neurogenic Communication Disorders. Burlington, Jones & Bartlett.
- Morris, J. C. (1994). Handbook of Dementic Illnesses. NY, Marcel Dekker Inc.
- Murray, L.L. & Clark, M.H (2015). Neurogenic Disorders of Language and cognition. Austin, Texas, Pro-Ed Inc.

SLPS 404: Aging and Communication

Marks -100

64 Hours

Objectives

- Understand the nature of aging
- Explain the factors affecting aging and its impact on health and social status
- Enumerate the relationship between cognition and aging and its impact on communication disorders
- Implications of physical aging on social life
- knowledge regarding the policies addressing cognitive communication issues in elderly.
-

Unit 1: Demographic relationships

- Concepts of aging: Gender and Race influence on aging, global aging.
- Historical perspective on aging and myths and stereotyping (Ageist Language) on aging
- Issues related to aging: Marital status and Economic status, Health care-long term care
- Health and aging (Health promotion and disease prevention, Healthcare finances)
- Attitudes of healthcare professionals about aging,
- Cultural issues related to aging; social and financial aspects (Income, work and retirement)
- Indian perspectives on Aging; Geographical distribution

Unit 2: Influence on general health

- Biological, Genetic and Environmental theories of aging
- Impact of aging on Speech and Language Centers (subsystems of Speech) and special senses.
- Concepts on Cognitive orientation, delirium, attention, memory and learning.
- Psychological decline due to aging- personality issues and quality of life
- Aging and Motoric performance: influence on range of motion, muscle strength, endurance, praxis, and work performance

Unit 3: Communication Issues

- Speech related issues consequent to aging: Impact on Voice, Resonance, Articulation and Swallowing
- Impact of age on language: Primary, secondary and tertiary factors, language disorders in elderly
- Aging and cognitive communication disorders

• Unit 4: Ethical and policy issues

- Historical perspectives on policies in elderly population
- Policies governing the elderly: Social, Medical, PWD Act and aging network
- Ethical issues and decision making, abuse and neglect in the elderly population

Unit 5: Livelihood and care

- Transition from adulthood to old age: issues related to finance, work and retirement options.
- Livelihood and care of the elderly people- Aspects related to independent living, and healthcare

- Long term care and empowerment for elderly; Elderly care: ideas from India and around the world

References

- Chop, C. W. (2015). Demographic trends of an aging Society. In Chop, C. W &Robnett, H. R (3rd Eds.). Gerontology for health care professional. MA: Jones and Bartlett Learning Burlington.
- Brossoie, N., & Chop, C. W. (2015). Social gerontology. In Chop, C. W., &Robnett, H. R (3rd Eds.). Gerontology for health care professional. MA: Jones and Bartlett Learning Burlington
- Gregory, J. C., &Sandmire, A. D. (2015). The physiology and pathology of aging. In Chop, C. W., &Robnett, H. R (3rd Eds.).
- Gerontology for health care professional. MA: Jones and Bartlett Learning Burlington Robnett, H. R., & Bolduc, J. J. (2015).
- The cognitive and psychological changes and associated with aging. In Chop, C. W., &Robnett, H. R (3rd Eds.). Gerontology for health care professional. MA: Jones and Bartlett Learning Burlington
- Toner, A. M., Shadden, B. B., &Gluth, B. M. (2nd Ed.). Aging and communication. Austin Texas: Pro-ed.
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- Ewald, D. P (2015). Future concerns in an aging society. In Chop, C. W., &Robnett, H. R. (3rd Ed.). Gerontology for health care professional. MA: Jones and Bartlett Learning Burlington
- Robnett, H. R., & O'Sullivan, A. (2015). Living options and continuum of care. In Chop, C. W., &Robnett, H. R (3rd Eds.). Gerontology for health care professional. MA: Jones and Bartlett Learning Burlington

AS 405: Dissertation in Speech Sciences/ Speech Pathology.

Or

AS 406/ Dissertation in Language Sciences/ Language Pathology.

SLPCP 305 & 407: CLINICAL PRACTICUM IN SPEECH LANGUAGE PATHOLOGY

Know-how:

- a) Observation of modified barium swallow and/or flexible endoscopic examination of swallowing as part of team assessment
- b) Observe and identify reports of persons with neurogenic communication disorders in tests such as EEG, CT scan, MRI etc.
- c) Reversible and irreversible conditions that cause neurogenic communication disorders.
- d) Certification procedures
- e) Rights and privileges of persons with communication disorder
- f) Ethics in clinical practices

Demonstrate:

- a) Perform assessment of typically developing child using assessment protocols for learning disability
- b) Demonstrate process of differential diagnosis for persons with adult language and cognitive communication disorders.
- c) Use of AAC for adults with communication disorders (e.g., alphabet supplementation board, software applications)
- d) Perform assessment of phonological awareness, visuospatial skills, orthographic skills on typically developing children.

Do:

- a) Complete evaluation, write detailed evaluation report, counsel persons with communication disorder and their families as required for the following:
 - 1) Three persons with aphasia using appropriate screening, diagnostic (WAB/ BDAE etc.) and performance tool
 - 2) Bed side screening for five adults with communication disorders.
 - 3) Three persons with adult cognition communication disorders using appropriate screening (ACE/MMSE/CLQT etc.), diagnostic (ABCD/CLAP etc.) and performance tool
 - 4) Three persons with motor speech disorders including perceptual evaluation of speech subsystems, speech intelligibility assessment, instrumental assessments for respiration or phonology and quality of life assessment
 - 5) Clinical swallow examination for five persons with concerns in swallowing
 - 6) Three children at risk for language learning disability
- b) Plan and carry out intervention program for adults with neurogenic speech disorders, aphasia, cognitive communication disorders and dysphagia
- c) Prepare a report for persons with communication disorders for medico-legal purposes

