PROPOSED SYLLABUS FOR
MASTER OF AUDIOLOGY AND SPEECH LANGUAGE PATHOLOGY (MASLP)
(2010-2012)

APPROVED BY

REHABILITAION COUNCIL OF INDIA
(RCI)

(Statutory Body)

Ministry of Social Justice & Empowerment
NEW DELHI-110015

RULES REGULAION AND NORMS FOR MASLP

1.0 **Nomenclature:** Master of Audiology and Speech Language Pathology [MASLP] Revised Syllabus 2010.

2.0 **Admission criteria**: MASLP/B.Sc (Sp & Hg)/ B.Sc. (HLS) degree or equivalent from any recognized University in India with minimum pass percentage required as per University or RCI norms.

3.0 **Medium of instruction:** English.

4.0 **Duration of the Course:** Two academic years.

5.0 **Course work:** Student to pursue the course as given in the enclosed course curriculum.

6.0 **Award of Degree:** The respective University on successful completion of the requirements will award the degree.

7.0 **Criteria of passing** : Minimum marks for pass in each paper will be **50% (50%external and 50% internal**) and practicum will be **(50%external and 50% internal**).

8.0 **Attendance:** Each year shall be taken as a unit for purpose of calculating attendance and a student shall be considered to have put in required attendance for the year, if he/she has attended not less than 80% of the number of working periods (lectures, seminars) and 90% of clinics during each year. Failures to put in / meet the required attendance by any student render him / her disqualified to appear in the University examination. The candidate who will not be able to take the examination for want of attendance will be declared as Failed and will have to repeat the exam subsequently by putting in required attendance. Shortage of attendance can be condoned in genuine cases of absenteeism as per rule and guidelines of respective University.

9.0 **Appearance for the Examination**: A candidate shall apply for all papers of a year when he/she appears for the examination of that year for the first time.
If candidate is failing one or more subject (s), he/she will be appearing for respective subjects (s) only (Theory/Practical Subject)

10.0 **Scheme of Examination**

10.1 There shall be a University examination at the end of each year. The duration of the theory exam is 03 hours.

10.2 Every theory question paper shall ordinarily consist of ten questions with one question for each unit, subject to the concerned universities regulation.

10.3 In case of theory papers the continuous evaluation (IA) will be for 20 marks. This covers a maximum of 5 marks for attendance & 15 marks for tests, seminars, assignments etc.

10.4 For clinical practicum, continuous evaluation (IA) will be based on performance of the candidate during the year. Examination for clinical practicum will be held along with theory papers by the university. The concerned department shall nifty in the first week of each year, scheme of continuous evaluation (IA) for theory & practical.

10.6 At least one week prior to the last working day, continuous evaluation (IA) marks secured by the candidates shall be displayed on the notice board.

10.7 The Department or the council may at their discretion decide to give repeat test/seminar to candidates who absented themselves for the same when the council is convinced that the absence of the candidate is on valid grounds/reasons. However, the council can allow the candidate to avail this provision only within the duration of that year.

10.8 The statement of continuous evaluation (IA) shall be sent to the Registrar (Evaluation) for both theory and clinical practicum at least one week prior to the commencement of the particular year examination.

11.0 **Practicals**

I) At the end of each year internal viva voce exam will be carried out of 50 marks for award of internal assessment for clinical work performed and external viva for 50marks throughout the year.

12.0 **Dissertation**

In the 2nd year, student will work on a selected topic of dissertation prepared under supervision and guidance of recognized faculty and will submit the same at the end of the year. This shall be assessed as accepted or as rejected with no marks carried there of as per concerned University norm. In the event of discrepancy between internal & external examiners the dissertation will be referred to a third examiner and his/her verdict on same will be taken as final. The candidates shall submit four copies of dissertation before the commencement of the theory examination of that year. Candidates who fail to submit their dissertation on or before the stipulated date shall not be permitted to appear for the final year examination. It is fair to attach a copy of data samples and students should also submit a soft copy of the dissertation.

13.0 **Scheme Of Instruction**

13.1 In each semester there shall be five theory (5) papers. The deled scheme of examination and paper titles are as given in Annexure 1

13.2 Dissertation shall be addition to a theory papers.

13.3 The topic content of each paper shall as far as possible be arranged as five equal units

13.4 Hours of instruction (contact hours) per week

Theory : 3 hours per subject per week
Practical : 15 hours per week

14.0 **Board of Examiners, Valuation**

14.1 There shall be Board of Examiners for scrutinizing and approving the question papers and scheme of valuation

14.2 About 50% of the examiners for scrutinizing and approving the question papers and scheme of valuation shall be from outside the institution/university.

14.3 Double valuation for the theory; dissertation and the average of the marks awarded by the internal and external examiners shall be taken as the final award.

14.4 In case of 20% or more deviation in the marks awarded by the internal and the external valuer, the scripts shall be referred to the third valuer and his evaluation will be final.

14.5 Grace marks to the candidate will be awarded based on University rules.

15.0 **Classification of Successful Candidates**

15.1 Minimum for a pass in each paper shall be as per the concerned university regulations.

15.2 Grading:

50% Pass Class
51 < 60% Second Class
61 < 75% First Class
76% and above Distinction

OR

As per rules of the respective universities.

15.3 Announcement of result. Classes and ranks for the course as a whole will be as per the concerned university regulations.

16.0 Criteria For Pass

16.1 Candidates of first year MASLP are permitted to carry over all the failed subjects to the second year MASLP and appear for second MASLP examination concurrently along with failed subject of first MASLP. However these candidates have to pass all the failed subjects of first MASLP to become eligible to MASLP degree.

17.0 **Miscellaneous**

Any other issue not envisaged above shall be resolved by RCI/ the Vice Chancellor in consultation with the appropriate body of the University which shall be final and binding.

Blue Print of Question paper model for MASLP

Question NO	Answers to all ten questions	Total Marks 80
I	A. XXXXXXXXXXXXXXXXXXX B. XXXXXXXXXXXXXXXXXXX	4 4
II	A. XXXXXXXXXXXXXXXXXXX B XXXXXXXXXXXXXXXXXXX C XXXXXXXXXXXXXXXXXXX	2 3 3
III	A. XXXXXXXXXXXXXXXXXXX B. XXXXXXXXXXXXXXXXXXX C XXXXXXXXXXXXXXXXXXX D XXXXXXXXXXXXXXXXXXX	1 1 3 3
IV	A. XXXXXXXXXXXXXXXXXXX B. XXXXXXXXXXXXXXXXXXX	2 6
V	A. XXXXXXXXXXXXXXXXXXX B. XXXXXXXXXXXXXXXXXXX C. XXXXXXXXXXXXXXXXXXX D. XXXXXXXXXXXXXXXXXXX	2 2 2 2
VI	A. XXXXXXXXXXXXXXXXXXX B. XXXXXXXXXXXXXXXXXXX C. XXXXXXXXXXXXXXXXXXX	2 2 4
VII	A. XXXXXXXXXXXXXXXXXXX B. XXXXXXXXXXXXXXXXXXX C. XXXXXXXXXXXXXXXXXXX	2 5 1
VIII	A. XXXXXXXXXXXXXXXXXXX B. XXXXXXXXXXXXXXXXXXX C. XXXXXXXXXXXXXXXXXXX D. XXXXXXXXXXXXXXXXXXX	1 1 1 5
IX	A. XXXXXXXXXXXXXXXXXXX B. XXXXXXXXXXXXXXXXXXX C. XXXXXXXXXXXXXXXXXXX	2 1 5
X	A. XXXXXXXXXXXXXXXXXXX B. XXXXXXXXXXXXXXXXXXX C. XXXXXXXXXXXXXXXXXXX	3 1 4

COURSE CONTENTS

Ist Year			
Code No	**Paper Title**	**Theory Hours**	**Total theory + IA**
SH 101	**Statistics and research Methods**	**75Hrs**	**80+20**
SH 102	**Advances in Speech Sciences**	**75Hrs**	**80+20**
SH 103	**Clinical Linguistics**	**75Hrs**	**80+20**
SH 104	**Auditory Physiology**	**75Hrs**	**80+20**
SH 105	**Psychophysics of audition**	**75Hrs**	**80+20**
SH 106	**Voice and Fluency Disorders**	**75Hrs**	**80+20**
SH 107	**Speech language Processing**	**75Hrs**	**80+20**
SH 108	**Clinical Practicum Speech Pathology**	**15hrs per week**	**50+50**
SH 109	**Clinical Practicum Audiology**	**15hrs per week**	**50+50**
IInd year			
Code No	**Paper Title**	**Theory Hours**	**Total theory + IA**
SH 201	**Language Acquisition and Language Disorders in Children**	**75Hrs**	**80+20**
SH 202	**Speech Perception and its disorders**	**75Hrs**	**80+20**
SH 203	**Clinical phonology and Neuromotor Disorders**	**75Hrs**	**80+20**
SH 204	**Diagnostic Audiology**	**75Hrs**	**80+20**
SH 205	**Hearing Devices**	**75Hrs**	**80+20**
SH 206	**Adult Language Disorders**	**75Hrs**	**80+20**
SH 207	**Advances in the management of Persons with Hearing Disorders**	**75Hrs**	**80+20**
SH 208	**Dissertation**	**Accept**	**Reject**
SH 209	**Clinical Practicum , Speech Pathology**	**15hrs per week**	**50+50**
SH 210	**Clinical Practicum , Audiology**	**15hrs per week**	**50+50**

FIRST YEAR MASLP

Ist Year			
CODE	**PAPER TITLE**	**THEORY HOUR**	**TOTAL THEORY+ IA**
SH101	**STATISTICS AND RESEARCH METHODS**	**75 Hrs**	**80+20**
SH 102	**ADVANCES IN SPEECH SCIENCES**	**75 Hrs**	**80+20**
SH 103	**CLINICAL LINGUISTICS**	**75 Hrs**	**80+20**
SH 104	**AUDITORY PHYSIOLOGY**	**75 Hrs**	**80+20**
SH 105	**PSYCHO PHYSICS OFAUDITION**	**75 Hrs**	**80+20**
SH 106	**VOICE AND FLUENCY DISORDERS**	**75 Hrs**	**80+20**
SH 107	**SPEECH & LANGUAGE PROCESSING**	**75 Hrs**	**80+20**
SH 108	**CLINICAL PRACTICUM- SPEECH LANGUAGE PATHOLOGY**	**75 Hrs**	**80+20**
SH 109	**CLINICAL PRACTICUM-AUDIOLOGY**	**75 Hrs**	**80+20**

SH . 101 : ADVANCE STATISTICS AND RESEARCH METHODS (75 hrs)

A. Statistics:

1) Statistics – purpose – approach-method-measures of central tendency- dependability of these measures-research applications.

2) Measures of variability – types and meaning of various measures – research applications.

3) Standard scored – I scores – normal distribution deviations – skewness and kurtosis – conditions of applications – limitations in interpretation.

4) Theory of probability – principles and properties of normal distribution – bonominal distribution – interpretation of data using the normal probability curve –causes of distribution – deviations from the norm al forms.

5) Correlation – meaning –coefficient of correlation –linear correlation – product – moment correlation – rank correlation, biserial correlation, tatracoric correlation partial and multiple correlation – regression equation.

6) Variance – concept – foundations – assumptions – one way classification. ANOVA, MANOVA, ANOOVAM, MANCOVA.

7) Item analysis – item pool – its selection – item difficulty item variance – item conduction – time validity – difficulty index.

8) Non-parametric statistics – its nature and condition and application – non- parametric analysis of variance and measures of association – tests of difference with correlated and uncorrelated date – tests of similarity.

9) Selection appropriate statistical methods in the research.

B. Research Methods:

1) Methods of research in behavioural sciences – research designs – measuring – purpose – principles – needs – applications between group designs and single subject research designs.

2) Basic of research – science scientific approach – problems – hypothesis – constructs – variables.

3) Types of research – expirical rationale – experimental and export-factor research – laboratory experiments – field studies – survey research – fundamental research – epidemiology – clinical and applied research.

4) Techniques of sampling – sampling and randomness – principles of randomization – random assignment – methods – random sampling – stratified sampling, incidental sampling – purposive samples of one to tone matched sampling – size of sample.

5) Measurement – foundations – types – reliability – validity

6) Variance – Implication to research – variance control.

7) Techniques of equation - experimental and control groups – matching and randomization – advantages, disadvantages and limitations.

8) Research designs – poor designs, good designs – various types of group designs – various types of single subject research designs.

9) Analysis and interpretation – principles, indices – cross – breaks – factor analysis – multivariate statistics – time series analysis.

10) The research report – cardinal characteristics – purpose – structure presentation and writing style

LIST OF BOOKS

ADVANCE STATISTICS AND RESEARCH METHODS

Essential:

1) Clinical Research in Communicative Disorders. (2nd Edition). Principles and Strategies. M.N. Hegde.

2) Introduction to Clinical Research in Communication Disorders. Mary and Grace.

3) Pannbacker, M.H. and Middleton, G.F. (1994). Introduction to Clinical Research in Communication Disorders. San Diego: Singular Publishing. ISBN 1-56593 – 219-6.

4) Maxwell, D.L. and Satake, E. (1997). Research and Statistical Methods in Communication Disorders. Baltimore: Williams and Wilkins, ISBN 0-683-05 655-7.

5) Stein, F. and Cutler, S.K. (1996). Clinical Research in Allied Health and Special Education. San Diego: Singular Publishing Group Inc. ISBN 1-56593-631-0.

Additional:

1) Portney, L.G. and Walkins, M.P. (1993). Foundations of Clinical Research. Connectient: Appleton and Lange. ISBN 0 –8385-1065-5.

2) Woods, A., Fletcher, P. and Hughes, A. (1986). Statistics in Language Studies. Cambridge: University Press. ISBN 0-521-253268.

SH 102 : ADVANCES IN SPEECH SCIENCES (75 hrs.)

1. Life span changes in speech mechanism including developmental milestones (3 hrs.)

2. Physiology of Speech production.

a) Respiratory System: Fundamentals of aerodynamics. Aerodynamic events in speech.. Passive and active forces in respiratory function. Breathing for speech and song. Speech breathing kinematics and mechanism inferences. Kinematics of the chest wall during speech production. (6 hrs.)

b) Laryngeal System: Molecular and cellular structure of vocal tissue. Laryngeal biomechanics, Models of vocal fold vibration (one-mass model, multi-mass model etc.). Co-ordination of respiratory and laryngeal systems in phonation. Control of fundamental frequency, vocal intensity and efficiency. Fluctuations and Perturbations in vocal output. (6hrs.)

c) Articulatory and Resonatory systems. Patterns of velopharyngeal closure, Effects of vowel height on velopharyngeal airway resistance. Oral sensory perception. Orofacial force physiology. (5 hrs.)

3) Theories and models of speech production. (12 hrs.)
Closed loop model, Kozhavnikov and Chistovich model, Associative chain model, Wickelgren's model, Mc Neilage's model, Garett's model, Dell's activating model, Shatuck – Huffnagel's model, Acoustic theory of Speech Production.

4) Principles, instrumentation and measurement procedures – Digital Filters – FIR and IIR – Basic algorithms – DFT and FFT – short-time analysis – Auto-correlation – Cepstrum – Linear Prediction. (25 hrs.)
   a) Aerodynamic analysis of speech.
   b) Acoustic analysis of speech (Fo and Intensity measurement techniques – Jitter and shimmer measurements – Inverse filtering - LTAS.
   c) Articulation measurements x-ray microbeam and NMR methods – electropalatography.
   d) Perceptual analysis of speech (including segmental and supra- segmental aspects and speech intelligibility).

5) Speech recognition,. Speaker identification. Forensic Speech Analysis. (5hrs)

6) Speech Analysis and Synthesis – Techniques, limitations and applications.

7) Application of perceptual and instrumental techniques to analysis of infant cry, vocalizations, babbling and pre-speech vocal skills. Interpretation, Diagnostic and therapeutic significance. (6 hrs.)

8) Recent trends in speech science measurement and application. (2 hrs.)

LIST OF BOOKS

ADVANCES IN SPEECH SCIENCES

Essential :

Fundamentals of Speech Synthesis and Speech Recognition. Basic concepts, State of the Art and future challenges. Keller, E. (1994). England: John Wiley and Sons Ltd. ISBN 471 94449.

A Basic Introduction to Speech Perception. Speech Science Series. Ryalls, J. (1996). California: Singular Publishing Group, Inc. ISBN 56593 – 617 – 5.

The Acoustics of Speech Communication. Fundamentals, Speech Perception Theory and Technology. Picket, J.M. (1999). USA: Allyn and Bacon. ISBN 0-205-19887-2. nd

Speech Science Primer. Physiology, Acoustics and Perception of Speech. 2 Edition. Borden, G.J. and Harris, H.S. (1984). Baltimore: Williams and Wilkins. ISBN 0-683-00942-7.

Clinical Examination of Voice. Disorders of Communication Series. Hirano, M. (1981). New York: Springer-Verlag Wien. ISBN 3-211-81659-3.

Clinical Measurement of Speech and Voice. 2 Edition. Baken, R.J. (1996). California: Singular Publishing Group, Inc. ISBN 1-56593-809-7.

Handbook of Clinical Speech Physiology. Barlow, S.M. with Collaborators, (1999). San Diego: Singular Publishing Group, Inc. ISBN 1-565-93267-6.

Respiratory Function in Speech and Song. Hixon, T.J. and collaborators. (1991). San Diego: Singular Publishing Group, Inc. ISBN 1-879105-1.

Producing Speech: Contemporary Issues for Katherine Stafford Harris. Bell – Berti, F. and Raphael, L.J. (Eds.). (1999). AIP Press, New York. ISBN 1-56396-286-1.

Readings in Clinical Spectrography of Speech. Baken, R.J. and Daniloff, R.G. (Eds.). (1991). California: Singular Publishing Group, Inc. ISBN 1-879105-04-7.

Infant Communication: Cry and Early Speech. Murray, T. and Murray, J. (1980). Texas: College Hill Press. ISBN 0-933014-62-7.

SH 103 : LINGUISTICS IN CLINICAL PRACTICE/INDEPENDENT PROJECTS **(75 hrs.)**

1) Fundamentals of Linguistics for clinicians: (12 hrs.)
   a) Terminologies and concepts of linguistics: Linguistic dichotomies – selection and combination – competence and performance – Language and Parol etc.
   b) Semantic relationships: associations, fields and features – categories, complexes and retrieval
   c) Pragmatics: Theoretical issues – Deixis and anaphora –

Definiteness – Discourse (focus on understanding normal and disordered language)

2) Psycholinguistics and language acquisition - Issues involved in language acquisition - Motherese - Second language acquisition - Language acquisition in bi & multi - lingual environments. (12 hrs.)

3) Language and Thought. Their relationship and dependency in language acquisition. (5 hrs.)

4) Neurolinguistics – Language and the brain – Localization – Left brain – right brain differences – Coding and decoding – Neuroanatomical and Neurophysiological bases of language learning and dysfunction – Linguistic and Psycho-neurolinguistic models of language pathology. (15 hrs.)

5) Scope of clinical linguistics –
   a) Linguistics and assessment of speech language impairment (12 hrs.)
      Speech production - Speech perception - Phonology - Syntactic assessment – Semantics - Pragmatics - Prosody - Determining speech intelligibility using segmental, phonological, prosodic and electropalatography studies - Linguistic profiling for language impairments.

   b) Application of linguistics to the study of speech-language impairments - Acquired aphasia - stuttering - developmental language disorders - developmental speech disorders and acquired neurogenic disorders. (12 hrs.)

   c) Application of psycholinguistics to intervention. (5 hrs)
      Theoretical issues and clinical applications.

6) Review of current literature and research designs in clinical linguistics (2 hrs.)

LIST OF BOOKS

LINGUISTICS IN CLINICAL PRACTICE

Essential:

Linguistics in Clinical Practice. Grundy, K. (2Ed.). (1995). Whurr Publishers. ISBN 1-897635-52-4.

Advances in Applied Psycholinguistics Vol.1 and 2. Disorders of First Language Development and Reading, Writing and Language learning. Rosen berg, S. (Ed.). (1987). Cambridge University Press. ISBN 0-521-31732 – 0 V.1: Paper Back, ISBN 0-521-31733-9 V.2: Paper Back.

Theoretical Linguistics and Disordered Language. Ball, M.J. (Ed.). (1988). London: Croom Helm. ISBN 0-7099-5012-8.

Pragmatics of Language. Clinical Practice Issues. (Ed.). Gallagher, T.M. (1991). Singular Publishing Group, Inc. ISBN 1-879105-10-1.

Case Studies in Clinical Linguistics. (Ed.). Perkins, M. and Howard, S. (1995). UK: Whurr Publication. ISBN 1-897635-75-3.

Linguistics and Aphasia: Psycholinguistic and Pragmatic Aspects of Intervention. Lesser R. and Milroy L. (1993). Longmann. ISBN 0-582-02221-5

The clinician's guide to linguistic profiling of language impairm ent. Ball, M.J. (1992). Great Britain: Far Communication Ltd. ISBN 0-9514728-8-7.

Additional:

1) Child Language and Developmental Dysphasia – Clahsen, H. Studies in Speech Pathology and Clinical Linguistics. (1988). Amsterdam: John Benjam ins Publishing Co. ISBN 90-272-4332-8.

2) First and Second Language Phonology. Yavas M. (Ed.). (1994). San Diego: Singular Publishing Group. ISBN 1-56593-167-X.

SH 104 AUDITORY PHYSIOLOGY (75 hrs)

1) EXTERNAL EAR - ANATOMY and PHYSIOLOGY (6 hrs)

Phylogeny and ontogeny of development.
Role of pinna and external auditory meatus, Resonance and diffraction properties.

2) MIDDLE EAR-ANATOMY & PHYSIOLOGY (10 hrs)

Phylogeny and ontogeny of development.
Middle ear impedance matching transformer action, Acoustic and non-acoustic reflexive pathways, Eustachian tube function.

3) COCHLEA - ANATOMY & PHYSIOLOGY

(10 hrs)

Phylogeny and ontogeny of development.
Macro & Micro-anatomy including cochlear fluids, blood supply, innervation.

Cochlear mechanics - basilar membrane mechanics - Historical and current status, Cochlear electrophysiology, Cochlear potentials-their generation and properties, Cochlear transduction, Otoacoustic emission, Other recent advances.

4) AUDITORY NERVE - ANATOMY & PHYSIOLOGY

(10 hrs)

Structure and tonotopic organization.
Physiology: Neurotransmitters in the auditory system: type of synapses, Neurotransm itters Vs Neuro-modulators, properties and functions of neurotransmitters. Afferent & efferent neurotransmitters. Electrophysiology - Action potential generation, properties, Stimulus coding in auditory nerve. Frequency, intensity and temporal coding, Single nerve and compound tuning curves.

5) THEORIES OF HEARING (8 hrs)

Critical Evaluation

6) CENTRAL AUDITORY PATHWAYS & PHYSIOLOGY

(8 hrs)

Afferent (Ascending) pathway and anatomy and tonotopic organization in central auditory system.

Neuro-physiology of the central auditory pathway, stimulus coding at various levels in the CANS.

7) AUDITORY CORTEX & ANATOMY & PHYSIOLOGY

(8 hrs)

Anatomy and tonotopic organization of the primary and secondary auditory area. Neuro-physiology of auditory area.

8) EFFERENT PATHWAYS - ANATOMY & PHYSIOLOGY

(7 hrs)

Function of efferent Pathways. Effect on cochlear physiology and

auditory nerve and C.N. perception of auditory stimulus, protective function.

9) VESTIBULAR SYSTEM - ANATOMY & PHYSIOLOGY (8 hrs)

- Afferent vestibular pathways
- Physiology of human balance functions

LIST OF BOOKS

AUDITORY PHYSIOLOGY

Sahley, T.L., Nodas, R. H. and Musiek, F.E. (1997). Efferent Auditory System: Structure and Function. San Diego: Singular Publishing Group, Inc.

Berlin, C. (Ed). (1984). Hearing Science, San Diego, California: College Hill Press.

Berlin, C. (Ed). (1996). Hair cells and Hearing Aids. London: Singular Publishing Group

Dallos, P. (1973). Auditory Periphery: Biophysics and Physiology. New York: Academic Press rd
Durrant, J. D. and Lovr inic, J. H. (1995). Bases of Hearing Science, 3 ed., Baltimore: Williams and Wilkins.

Evans, E.F. and Wilson, J.P. (1977). Psychophysics and Physiology of Hearing, London: Academic Press. nd
Gelfand, S.A. (1990). Hearing: An Introduction to Psychological Acoustic 2 Ed. New York: Marcel Dekker.

Gullick, W.L. (1971). Hearing Physiology and Psychophysics. New York: Oxford University Press. Nd
Moore, B.C.J. (1982). An Introduction to Psychology of Hearing, 2 Ed. London: Academic Press.

Moore, B. C. J. (Ed). (1995). Hearing. San Diego, California; Academic Press.

Pickles, J. D. (1992). An introduction to Physiology of Hearing. New York: Academic Press.

Tobias J. V. (Ed). (1970). Foundation of Modern Auditory Theory, Vol. I. New York: Academic Press.

Tobias, J. V. (Ed.). (1972). Foundations of Modern Auditory Theory, Vol. II. New York: Academic Press. nd 14. Yost, W.A. and Nilesen, D.W. (1985). Fundamentals of Hearing. 2 Ed. New York: C.B.S. College Publishing.

Gullick, W.L., Gescheider, G.A. and Frisina, R.A. (1989). Hearing: Physiological Acoustics, Neural Coding and Psycho-acoustics. New York: Oxford Univ. Press.

John, F. and Santos, S. (Eds.). (1989). Physiology of the Ear. New York: Academic Press.
Yost A.W. (1994). Fundamentals of Hearing. California: Academic Press Inc.

Aitkin, L. (1990). Auditory Cortex: Structural and Functional Basis of Auditory perception. London: Chapman & Hall.

Keidel, W.D. and Neff, W.D. (Eds). (1975). Auditory System. Handbook of Sensory Physiology. Vol. 1 & 2. New York: Springer Verlag.

Kahane. J.C. and Folkins. J. G. (1984). Atlas of Speech and Hearing Anatomy. Ohio: Charles Merill Publishers.

Moller. A.R. (1983). Auditory Physiology. New York: Academic Press.

Musiek. F.E. and Hoffman. D.W. (1990). An introduction into the functional neurochemistry of the auditory system. Ear and Hearing, 11 (6). 395 - 402.

Musie k F. E. (1986). Neuroanatomy, Neuro physiology and Central Auditory assessment. Part I. Brain stem. Ear and Hearing.7. 202 - 219.

Museik F. (1986). Neuroanatomy, Neuro physiology and Central Auditory Assessment. Part II. The Cerebrum. Ear and Hearing .7. 349 - 358.

Museik F. (1986). Neuro anatomy, neuro physiology and Central Auditory Assessment. Part III. Corpus Collosum and Efferent Pathways. Ear and Hearing. 7. 349 - 358.

Zemlin W.R. (1988). Speech and Hearing Sciences. Anatomy and Physiology. New Jersey: Prentice Hall.

Altschuler, R.A. and Hoffman, D.W. (1986). Neurobiology of Hearing- The Cochlea. New York: Academic Press.

Busser, P., Imbert M. and Kay, R.H. (1992). Audition. Cambridge: MIT Press.

JOURNALS

Ear and Hearing
Hearing Research
Hearing Research
JAR
JSHR
Scandinavian Audiology

SH 105 PSYCHOPHYSICS OF AUDITION **(75 hrs)**

1) PSYCHOACOUSTICS – REVIEW: (3 hrs)
Psychophysical Methods – Classical and Modern psychophysical methods.

2) THEORY OF SIGNAL DETECTION: (8 hrs)
Basic concepts - application of signal detection theory/neural Networks and ROC.

3) LOUDNESS: (10 hrs)
Absolute Threshold of Hearing.
MAP & MAF in air and water.
Loudness level, Loudness scaling - ordinal (Phon) and ratio (Sone), Need, applications. Fechner's Law, Steven's Power Law and their derivation. Effect of time, frequency and bandwidth. Role of cochlea, auditory nerve & CNS. Role of acoustic reflex. Temporal integration. Loudness of complex sounds/tones. Loudness growth. Parameters of loudness. Psychophysical power law, recruitment in normal ears, relationship between loudness and pitch.

4) PITCH: (8 hrs)
Factors affecting pitch perception (intensity, frequency, duration), Pitch scales (ordinal and ratio) Equal pitch contours. Pitch of complex tones. Pitch of missing fundamental and periodicity pitch. Theories of pitch perception. Abnormalities in pitch perception. JND for frequency. Effects of phase on the pitch of complex sounds.

5) DIFFERENTIAL SENSITIVITY FOR FREQUENCY AND INTENSITY AND TIME : (8 hrs)
Absolute and Relative differential sensitivities, Methods for measuring differential sensitivity, Weber's Law, Clinical applications.

6) MASKING AND CRITICAL BAND CONCEPT: (8 hrs)
Masking -types, psychophysical tuning curves. Critical band concept. Critical Band Vs Critical ratio. Methods of measurement of critical band. Concept of auditory filters, frequency resolution, masking and excitation pattern, central and non-simultaneous masking, two-tone suppression.

7) PERCEPTION OF QUALITY/TIMBRE AND COMPLEX TONES: (8 hrs)
Factors affecting perception of timbre. Helmholtz's theory of quality, Ohm's acoustical Law. Beats, aural harmonics and combination tones.

8) ADAPTATION : (8 hrs)
Definition, Adaptation Vs Fatigue, Methods of studying adaptation, Stimulus parameters affecting adaptation, Neuro-physiological process in adaptation.

Fatigue: Definition, NITTS, TLS, (Temporary Loudness shift) PTS.

9) TEMPORAL PERCEPTION : (4 hrs)

Temporal aspects of hearing, Temporal integration in sensitivity and loudness. Effect on Pitch and DL, Time-intensity trade, gap detection, Temporal DL

10) BINAURAL HEARING : (10 hrs)

Sensitivity (absolute and differential), loudness & pitch. Temporal dimension in binaural hearing. Binaural phenomenon - beats, rotating tones, time separation pitch. Time-intensity trade, Masking level difference. Localization vs Lateralization, Factors affecting localization, Neuro-physiological process. Clinical application of localization. Binaural phenomenon, Binaural fusion of pulsed stimuli, stereophonic effect, JND for dichotic phase.

LIST OF BOOKS

PSYCHOPHYSICS OF AUDITION

Stevens, S.S. and Warshofsky, F. (1971). Sound and Hearing. Netherlands: Time Inc.

Dallos, P. (1973). Auditory Periphery: Biophysics and Physiology. New York: Academic Press

Davis, H. and Silverman S.R. (Eds.). (1978). Hearing and Deafness. 4 Ed. New York: Holt, Rinehart and Winston.

Evans, E.F. and Wilson, J.P. (1977). Psychophysics and Physiology of Hearing. London: Academic Press.

Gelfand, S.A. (1990). Hearing: An Introduction to Psychological Acoustic. (2 Eds.). New York: Marcel Dekker.

Gullick, W.L. (1971). Hearing Physiology and Psychophysics. New York: Oxford University Press. Nd

Yost, W.A. and Neilsen, D.W. (1985). Fundamentals of Hearing. 2 Ed. New York: C.B.S. College Publishing.

Gullick, W.L., Gescheider, G.A. and Frisina, R.A. (1989). Hearing: Physiological Acoustics, Neural Coding and Psychoacoustics. Oxford Univ. Press.

Speaks, C.E. (1996). Introduction to Sound: Acoustics for the Hearing and Speech Sciences. San Diego: Singular Publishing Group Inc.

Yost A.W. (1994). Fundamentals of Hearing. California: Academic Press Inc.

Stuart, R and Howell, D. (1991). Signal and Systems for Speech and Hearing. California: Academic Press Inc.

Warren, R.M. (1999). Auditory Perception - A New Analysis and Synthesis. U.K.: Cambridge University Press.

Littler, J.S. (1965). Physics of the Ear. Oxford: Pargammon Press.

Busser, P., Imbert, M. and Kay, R.H. (1992). Audition. Cambridge: MIT press.

JOURNALS:

Ear and Hearing
Hearing Research
JAR
JSHR
Scandinavian Audiology

SH 106 : PERSPECTIVES IN DISORDERS OF FLUENCY AND VOICE (75 hrs.)

A) FLUENCY DISORDERS (37 hrs.)

1) Neurophysiological and neuropsychological bases of normal fluency. (2 hrs.)

2) Neurophysiological bases for the formation of developmental stuttering. Neuropsychological bases for stuttering behaviours (4 hrs.)

3) Different perspectives of stuttering. (15 hrs.)
Linguistic aspects of stuttering. Auditory processing in stutterers. Auditory feed back and stuttering. Motor processes in stuttering. Laryngeal behaviour in stutterers (VOT, VRT, VTT, STT, Laryngeal muscle activity). Perspectives on stuttering as a motor speech disorder. Articulatory dynamics of stutterers. CNS characteristics in stuttering. Stuttering as a prosodic disorder. Stuttering as temporal processing disorder. Respiratory function in stutterers. Stuttering and anxiety.

4) Theoretical issues in measurement of stuttering. (3 hrs.)
Treatment outcomes in stuttering – Relapse, Prognosis and maintenance. The nature of recovery Prevention of stuttering.

5) Recent advances in management of stuttering. (6 hrs.)
Group therapy. PsychoTherapy. Drug Therapy. Behavior Therapy.

6) Neurogenic Stuttering (3 hrs.)

7) Cluttering – Etiology, relationship between cluttering and stuttering. (2 hrs.)
Treatment of cluttering.

8) Review of current literature and research designs in fluency disorders. (2 hrs.)

LIST OF BOOKS

FLUENCY DISORDERS

Nature and Treatment of Stuttering: New Directions. (1985). Curlee, R.F. and Perkins, W.H. California: College – Hill Press, Inc. ISBN 0-85066-566-3.

The Neuropsychology of Developmental Stuttering. (1994). Hartm an, B.T. London: Whurr Publishers Ltd. ISBN 1-897635-46-x.

A Handbook of Stuttering. (1955). (5 Ed.). Bloodstein O. California: Singular Publishing Group, Inc. ISBN 1-56593-395-8.

Disorders of Fluency. (1989). (2 Ed.). Dalton P. and Hardcastle W.J. London: Whurr. ISBN 1-871381-07-x

Treatment Efficacy for Stuttering – A Search for Empirical Bases. (1998). Cordes, A.K. and Ingham, R.J. (Eds.). California: Singular Publishing Group. ISBN 1-56593-904-2.

Clinical Management of Motor Speech Disorders in Children. (1999). Caruso, A.J. and Strand, E.A. (Eds.). N.Y: Thieme. ISBN 0-86577-762-4.

Clinical Management of Stuttering in Older Children and Adults. (1999). Ham R.E. Maryland: Aspen Publishers, Inc. ISBN 0-8342-1117-3.

Producing Speech: Contemporary Issues. (1995). Bell-Berti, F. and Raphael, L.J. (Eds.). N.Y: AIP Press. ISBN 1-56396-286-1.

The Three Dimensions of Stuttering – Neurology, Behavior and Emotion. (2 Ed.). (1999). Logan, R. London: Whurr. ISBN 1-86156-073-7.

Behavioral Management of Stuttering. (1996). Onslow, M. SanDiego: Singular Publishing Group, Inc. ISBN 1-56593-633-7.

B) VOICE DISORDERS **(38 hrs.)**

1) Neuroanatomy and Neurophysiology of larynx. (3 hrs.)

2) Recent advances in measurement of voice and vocal fold function. (7 hrs.)
Introduction to clinical measurement of voice. EGG, Laryngeal electromyography, Videoscopy, imaging and other techniques. Measurement of resonance. History-taking, and perceptual assessment in voice evaluation.

3) Brief review of voice disorders in children and adults. Classification. (8 hrs.)
Perceptual, acoustic, aerodynamic and physiological characteristics of pathological voices. (emphasis on voice of transsexual, aging and voice, endocrine disorders, tracheostomized speakers, etc.). Differential diagnosis of voice disorders.

4) Recent advances in voice therapy including instrumentation, (6 hrs.)
introduction to phonosurgical techniques. Treatment outcome in voice disorders.

5) Professional voice users – Assessment and management. (8 hrs.)
Improving the professional voice.

6) Analyzing and comparing different types of alaryngeal speech. (4 hr.)
Intermediate and advanced stages of teaching alaryngeal speech.

7) Review of current literature and research designs in voice disorders. (2 hrs.)

8) Need for psychological approaches to treatment – psychotherapy – definition – types – general principles – applications in disorders of speech and hearing

VOICE DISORDERS

1) Vocal Fold Physiology – Frontiers in Basic Science. (1993). Titze, I.R. (Ed.). San Diego: Singular Publishing Group, Inc. ISBN 1-879105-86-1.

Principles of Voice Production. (1994). Titze, I.R. NJ: Prentice Hall, Inc. ISBN 0-13-717893x.

Neurolaryngology: Recent Advances. (1991). Hirano, M; Kirchner, J.A. and Bless, D.M. (Eds.). California: Singular Publishing Group, Inc. ISBN 1-879105-19-5

4) Diagnosis and Treatment of Voice Disorders. (1995). Rubin, J.S; Sataloff, R.T.; Korovin, G.S. and Gould, W.J. NY: IGAKU-SHOIN Medical Publishers, Inc. ISBN 0-89640-276-2

Medical Speech-Language Pathology – A Practitioner's Guide. (1998). Johnson, A.F. and Jacobson, B.H. NY: Thieme. ISBN 0-86577-688-1

6) Clinical Measurement of Speech and Voice. (1996). Baken, R.J. California: Singular Publishing Group, Inc. ISBN 1-56593-809-7

7) Professional Voice – The Science and Art of Clinical Care. (1991). Sataloff, R.T. NY: Raven Press. ISBN 0-88167-737-X.

Clinical Manual for Laryngectomy and Head and Neck Cancer Rehabilitation. (1993). Casper, J.K. and Colton, R.H. California: Singular Publishing Group, Inc. ISBN : 1-879105-61-6

PSYCHOTHERAPY

Psychotic Disorders in Children and Adolescents – Robert L. Findling S. Charles Schulz, Javad H. Kashani, Elena Harlan. Volume 44 – Developmental Clinical Psychology and Psychiatry. 2001 SAGE Publication, Inc. Thousand Oaks, London, New Delhi.

Introduction to Counselling and Psychotherapy. Edited by Stephen Palmer. 2000 First Publication, SAGE Publications, London, Thousand Oaks, New Delhi.

SH 107 SPEECH & LANGUAGE PROCESSING (75 hours)

(15 hrs)

1. Phonetic perception
   Perception of vowels - formants, F0, band width, duration, factors affecting vowel perception, static and dynamic cues, effect of co articulation.
   Consonant perception, cues for different consonants, static and dynamic cues, factors affecting consonant perception, effect of co articulation.

(15 hrs)

2. Spoken word recognition- Word under noise, filtered, truncated words, lexical decision, word spotting, phoneme triggered lexical decision, speeded repetition of words, continuous speech, tokens embedded in words and non words, rhyme monitoring, word monitoring, cross modal priming Issues

(15 hrs)

3. Stages and word recognition -lexical concept, lexical access, phonological encoding, production.
   The input to the lexicon-lexical access from spectra, constraints of temporal structure- Cohort models, interactive models of spoken word recognition – Logogen model lexical and phonetic processing-phonetic characterization task, phoneme restoration studies, phoneme monitoring task, sentence and word processing, Neighbourhood activation model.

(15 hrs)

4. Visual word recognition - models and theories; word and non word naming, acquired dyslexia and role of phonology in word recognition.
   Sentence comprehension and processing of components of language - parallel and serial models of processing, modularity and information sources, accounts of parsing, parsing issues, ambiguity in parsing, strategies for disambiguation. Reference and anaphora. Discourse comprehension and expression.

(15 hrs)

5. Sentence processing – basic capacities for perceiving phonetic contrasts - native
   1. Language contrasts, foreign language contrasts, coping with variability in speech signal.

   • Role of memory and attention
   • Prosodic organization in native language
   • Related developments in speech perception
   • Processing of phonological, morphological, syntactic, semantic and pragmatic aspects of language.

LIST OF BOOKS
SPEECH & LANGUAGE PROCESSING

Arbib, M.A. Caplan, D., & Marshall, J.C., (Ed) (1982). Neural Models of Language Processes, Academic Press, New York.
Durrand, and Laks, B., (Ed) (1999). Phonetics, Phonology and Cognition. Oxford University Press, US.
Hardcastle, W.J., & Laver,J., (Ed((1999). The Handbook of Phonetic Sciences. Blackwell Publishers, Oxford.
Kroeger, R.P.(2004). Analyzing Syntax. Cambridge University Press, UK.
O' Shaughnessy, D., (2 Edition) (2001). Speech Communication, Human and Machine. n d Universities Press, India.
Saeed, I.J. (1997). Semantics. Blackwell Publishers, Massachusetts.

CLINICAL PRACTICUM IN SPEECH LANGUAGE PATHOLOGY

Objectives:

At the end of the year the student will be able to:

1) Acquire skills to put the theoretical concepts into practical application.

2) Develop proficiency in administering special tests.

3) Develop proficiency in independently carrying out a case study.

4) Develop skills to envisage a project in a particular sphere of activity.

5) To develop skills in documentation.

Clinical Practicum Work:

1) To independently carryout assessment for various communication disorders.

2) To independently carryout intervention program effectively.

3) To develop skills in documenting diagnostic and intervention information.

4) To develop proficiency in instrumental assessment and interpretation.

5) To plan and execute a program for clinical use / public education in a particular Sphere including appropriate material.

6) To present a comprehensive case study utilizing relevant theoretical concepts.

CLINICAL PRACTICUM IN AUDIOLOGY

1. Calibration of audiometer. Rise-decay time. Measurement, distortion measurement, Calibration of warble tone.

2. Preparation of case reports.

3. Knows to - select appropriate diagnostic test,
   - administer ABR Independently,
   - interpret test profile,
   - design simple experiments with the help of supervisor.

4. Independently carryout hearing aid evaluation using functional gain measures including (1) selection and administration of appropriate test procedures (2) select hearing aids (3) make appropriate recommendations.

5. Measuring electro- acoustic characteristics of hearing aid as per the established standards for :
   - Body level hearing aids
   - Ear level (behind the ear) hearing aid
   - Hearing aids with AVC Circuit

6. Preparation of speech reading lessons and activities for auditory training

7. Necessary instrumentation for recording calibration tone, tape recording with noise.

SECOND YEAR POST GRADUATE COURSE

COURSE CONTENT

II Year MASLP			
CODE	**PAPER TITLE**	**THEORY HOUR**	**TOTAL THEORY+ IA**
SH201	Language Acquisition and Language Disorders in Children	**75 Hrs**	**80+20**
SH 202	Speech Perception and its disorders	**75 Hrs**	**80+20**
SH 203	Clinical phonology and Neuromotor Disorders	**75 Hrs**	**80+20**
SH 204	Diagnostic Audiology	**75 Hrs**	**80+20**
SH 205	Hearing Devices	**75 Hrs**	**80+20**
SH 206	Adult Language Disorders	**75 Hrs**	**80+20**
SH 207	Advances in the management of Persons with Hearing Disorders	**75 Hrs**	**80+20**
SH 208	Dissertation	**ACCEPT/ REJECT**	
SH 209	Clinical Practicum , Speech Pathology	**75 Hrs**	**80+20**
SH 210	Clinical Practicum , Audiology	**75 Hrs**	**80+20**

SH 201 : ADVANCES IN LANGUAGE ACQUISITION AND CHILDHOOD LANGUAGE DISORDERS **(75 hrs.)**

1) Critical review of current theories of language acquisition and its applications to assessment and intervention. (6 hrs.)

2) Overview of neuroanatomical, neurophysiological and neurochemical correlates of language acquisition. (4 hrs.)

3) Models of language processing (Lichtheim's model, Logogen model, and Microgenetic model). (5 hrs.)

4) Overview of : (15 hrs.)
   a) Word recognition and production - Spoken, Visual.
   b) Sentence Comprehension and production.
   c) Processing of phonological, morphological, syntactic, semantic and pragmatic aspects of language
   d) Information processing skills.

5) Memory in communication and communication disorders. (10 hrs.)
   Short term memory, working memory, and their importance in language processing. Serial and long-term memory. Visuospatial perception, motion perception. Attention – Types of attention, Development of attention.

6) Language development in exceptional circumstances: extreme deprivation, bilingual language exposure, twins, visual handicap, Williams syndrome (disassociation between language and cognitive functions), Hearing loss, Dyspraxia, Learning disabilities, Dysphasia, Acquired childhood aphasia. (10 hrs.)

7) Contemporary concepts and issues in Autism, SLI and LLD. (6 hrs.)

8) Cross-cultural considerations in assessment and management of developmental language disorders. (4 hrs.)

9) Specific assessment and intervention approaches for various developmental language disorders. (10 hrs.)

10) Reading, Spelling and Writing Disorders. Neurobiology of reading and writing. Phonological Awareness and Reading. Evaluation. Treatment approaches. (5 hrs.)

11) Counseling – meaning, scope – principles of counseling – types of counseling – individual, group and family, parental, vocational, educational, rehabilitative – behavioral counseling in the context of speech, language disorders.

12) Special psychotherapies – play therapy, group therapy, family therapy, psychodrama – intensive psychotherapy, brief psychotherapy to children with speech and language disorders.

LIST OF BOOKS
ADVANCES IN LANGUAGE ACQUISITION AND CHILDHOOD LANGUAGE DISORDERS

Intervention Planning for Children with Communication Disorders – A Guide for Clinical Practicum and Professional Practice (1994) Prentice – Hall, Inc. New Jersey. ISBN 0-13-138421-X.

Cross Cultural Perspectives in Language Assessment and Intervention. Topics in Language Disorders Series. Butler, K.G. (1994). U.S.A.: Aspen Publication. ISBN 0-8342-0594-7, Series 0-8342-0590-4.

Differential Diagnosis in Speech-Language Pathology – Philips, B.J. and Scello, D. (1998). Butterworth – Heinemann, ISBN 0-7506-9675-3.

Language Development in Exceptional Circum stances. Bishop, D & Mogford, K. (Eds.) (1993). U.K.: Erlbaum Associates Ltd., Publishers. ISBN 0-86377-308-7.

Language Disorders : A Functional Approach to Assessment and Intervention. Owens, R.E. (Jr.). (1991). U.S.A.: Macmillan Publishing Company. ISBN. 0-675-20773-8nd Developmental Disorders of Language. (2 Ed.). Adams, C., Brown, B. and Edwards, M. (1999). Lodnon: Whurr Publishers Ltd. ISBN 1-86156-020-6.

Children with Specific Language Impairment. Leonard, L.B. (1998). MA: MIT Press. ISBN 0-262-12206-5.

An Integrative Approach to Language Disorders in Children. Carrow–Wool Folk, E. & Lynch, J.I. (1982). USA: Grune and Stratton, Inc. ISBN 0-8089-1406-50-8089-1713-7 (pbk).

Memory and Language Impairment in Children and Adults. New Perspectives. Gillam, R.B. (1998). U.S.A.: Aspen Publishers, Inc. ISBN 0-8342-1213-7.

Developmental Cognitive Neuropsychology. Temple. C. (1997). U.K.: Psychology Press. ISBN 0-86377-401-6 (pbk)

Medical Speech Language Pathology. Johnson. A.F. and Jacobson B.H. (1998). New York: Thieme. TNY ISBN 0-86577-688-1, GTV ISBN 3-13-110531-3.

Evaluating Theories of Language - Evidence from disordered communication. Dodd. B., Campbell. R. and Worrall. L. (Eds.). (1996). London: Whurr Publishers.nd

Speech, Language and Communication. Handbook of Perception and Cognition(2 Ed.). Miller,J.L. and Eimas, P.D (Eds.). (1995). California: Academic Press, Inc. ISBN 0-12-497770-7.

COUNSELING

Testing and Assessment in Counselling Practice, 2 Edition – Edited by – C. Edward Watkins, JR., Vieki L. Campbell. 2000 by Lawrence Erlbaum Associates, Publishers Mahwah, New Jersey, London.

Counselling People with Com munication Problems – Peggy Dalton – 1994 – SAGE Publications, London, Thousand Oaks, New Delhi.

Introduction to Counselling and Psychotherapy. Edited by Stephen Palm er. 2000 First Publication, SAGE Publications, London, Thousand Oaks, New Delhi.

Introduction to Counselling Skills – Richard Nelson – Jones – 2000 SAGE Publications Ltd., London, Thousand Oaks, New Delhi.

SH202 : SPEECH PERCEPTION (75 hrs)

1) Introduction to speech perception, Acoustics of speech in relation to production. Coding of speech in the auditory pathway. (5 hrs)

2) Theories of speech perception : Acoustic theory, Neurological theories, motor theory, Analysis by Synthesis, Quantum theory. (8 hrs)

3) Methods used to study speech perception: Analysis by Synthesis, Parametric Synthesis, Articulatory synthesis. (8 hrs)

4) A) Perception of vowels and consonants in infants and adults (6 hrs)
B) Effects of co-articulation on speech perception

5) Perception of speech through the visual and tactile modes and through cochlear implants (6 hrs)

6) Dichotic listening : Definition, theories, factors affecting, application to speech and hearing (6 hrs)

7) Short term memory and speech perception. Stages of memory, Theories of short-term memory, perception of consonant and vowels , in short term memory. (8 hrs)

8) Speech intelligibility (8 hrs)
   a) Methods of predicting and measuring speech intelligibility
   b) Factors influencing speech intelligibility
   c) Application to speech and hearing

9) Perception of speech in the hard of hearing - Vowels, consonants, Coarticulation, supra- segmentals. Perception of speech through visual and tactile modality, through cochlear implants. Speech perception in adverse listening conditions - comparison of normal Vs hearing impaired (6 hrs)

10)Information processing skills (6 hrs)
   a) Sequential processing skills
   b) Simultaneous processing skills

11) a) Word recognition - spoken - visual (8 hrs)
   b) Sentence comprehension
   c) Processing of phonological morphological syntactic, semantic and pragmatic aspects of language.

LIST OF BOOKS

SPEECH PERCEPTION

Keller, E. (1994). Fundamentals of Speech Synthesis and Speech Recognition-Basic Concepts, State of the Art and Future Challenges. New York: John Wiley and Sons.

Kuhl, P.K. (1980). Infant Speech Perception: Reviewing Data on Auditory Category Formation. In P.L. Levinson and C. Sloan (Eds). Auditory Procession and Language-Clinical and Research Perspectives. New York: Grune & Stratton.

Kuhl, P.K. (1979). The perception of speech in early infancy. In N. Lass (Ed). Speech and language Advances in basic research and practice. Vol. I. New York: Academic Press.

Kuhl, P.K. (1982). Perceptual constancy of speech-sound categories. In G.H. Yeni-Konoshian, J.F. Kavanaugh and C. Ferguson (Eds.) Child Phonology, Vol. 2, Perception, New York: Academic Press.

Kuhl, P.K. (1982). Speech perception: An overview of current issues. In N.J. Lass, L.V. McReynolds, L.V., Northern, J. L. and Yoder, D. E. (Eds). Speech, Language and Hearing. Vol. I. Normal Process, Philadelphia: W.B. Saunders Company.

Lass, N.L. (Ed). (1976). Contemporary is sues in experimental phonetics. New York. Academic Press

Lehiste, I. (1972). The units of speech perception. In J.H. Gibert (Ed). Speech and cortical functioning. New York: Academic Press
Liberman and Mattingly (1985). Motor theory revised. Haskins laboratory report.

Linggard., R. (1985). Electronics synthesis of speech. Cambridge: Cambridge University Press.

Ainswoth, W.A. (1976). Mechanisms of speech recognition. International series in natural philosophy. Vol. 85, Oxford: Pergamon press.

Borden, G.J. and Harris K.S. (1980). Speech Science Primer: Physiology, Acoustics and Perception of Speech. London: Williams and Wilkins.

Cohen, A and Nooteboom, S. G. (Eds.). (1975). Structure and process in speech perception. New York: Springer - Verlag

Cole R.A. (1977). Invariant feature and feature detectors: Some developmental inplications. In S.J. Segalowitz and F.A. Gruber (Eds.) Language development and neurological theory. New York: Academic Press.

Eimas, P. and Miller, J.L.(Eds). (1981). Perspectives on the study of speech. New Jersey: Lawrence Erlbaum Associates.

Fant, G., and Tatham, M.A. (Eds). (1975). Auditory analysis and perception of speech. New York: Academic Press.

Fry, D.B. (1979). Physics of speech. Cambridge: Cambridge University Press.

Keller, E. (1994). Fundamentals of speech synthesis and speech recognition Basic concepts, state of the art and future challenges. New York: John Wiley & Sons.

Miller, J.L. and Eimas. P.D. (1995). (Eds). Speech, language and communication. New York: Academic Press.

Nakagawa S., Shikano K. and Tohdura. Y. (1995). Speech, hearing and neural network models. Ohmsha IOS Press, Amsterdam.

Nygaards L.C. and Pisoni D.B. (1995). Speech perception: New directions in research and theory. In. J.L. Miller & P.D. Eimas (Eds.) Speech language and communication. San Diego: Academic Press.

Pickett. J. M. (1980). The sounds of speech communication: A primer of acoustic phonetics and speech perception. Boston: Allyn and Bacon Press.

Mody M., Studdert Kennedy, M., and Brady S., (1994 - 95). Speech perception deficits in poor readers: Auditory processing or phonological coding. Haskins Laboratories Status Report on Speech Research, SR - 119/120, 1-24

Saito S. (1992). (Ed). Speech science and technology. Tokyo: Oshmsha Ltd.

Sanders D.A. (1977). Auditory perception of speech - An introduction to principle and problems. New Jersey: Prentice Hall.

Stevens. K.N. and Blumstein, S.E. (1981). The search for invariant acoustic correlates of phonetic features. In P. Eim as and J.L. Miller. (Eds). Perspectives on the study of speech. New Jersey: Lawrence Erlbaum Associates.

Tohkura, Y., Vatikiotis-Bateson, E. and Sagisaka, Y. (1992). Speech perception, production and linguistic structure. Tokyo: Ohmsha, IOS Press.

Wathen-Dunn, W. (Ed). (1967). Models for the perception of speech and visual form. Proceedings of a symposium Cambridge: The MIT Press.
Pavlovic, C.V. (1987). Derivation of primary parameters and procedures for use in speech intelligibility prediction. JASA, 82, 413-422.

Pickett, J.M. and E.M. Danaher. (1975). On discrimination of formant transitions by persons with severe sensorineural hearing loss. In G. Fant and M.A. Tatham (Eds.). Auditory analysis and perception of speech. New York. Academic Press.

Pickett, J.M. Ravoile S.G. (1979). Feature discrimination by persons with sensorineural hearing impairment. In B. Lindblom & S. Ohman (Eds.) Fronties of speech communication research.

Warren, R.M. (1999). Auditory perception-A new analysis and synthesis. UK: Cambridge University Press.

Anisworth, W. A. (1990). Advances in speech, hearing and language processing Vol. I. London: Jai Press Ltd.,

Cox. R.M. and McDaniel, D.M. (1989). Development of Speech intelligibility rating test for hearing aid comparisons. JSHR, 32, 347-352.

Flanagan J. L., (1972). Speech analysis, synthesis and perception. 2Ed. New York: Springer-Verlag. Denes, P. and Pinson, E. (1964). Speech chain. Beltone Lab.

Durant, J.D. and Lovrinic, J. H. (1977). Bases of hearing science. Baltimore, William & Wilkins.

SH203 : CLINICAL PHONOLOGY AND NEUROMOTOR SPEECH DISORDERS **(75 hrs.)**

A) CLINICAL PHONOLOGY

1) An overview of clinical phonology. From articulation to clinical phonology. Medical and Linguistic models. (2 hrs.)

2) Critical overview of current theories of phonology. (3 hrs.)

3) Phonological Awareness: Linking speech and literacy problems. (4 hrs.)

4) Disorders of phonology in different clinical populations. (6 hrs.)

5) Overview and recent developments in evaluation of phonology. (7hrs.)

6) Treatment Practices (6 hrs.)
   a Traditional and Phonological Intervention.
   b Motor Vs Cognitive learning.
   c Procedures based on minimal pairs.
   d Procedures based on Imagery.

7) Current literature and research designs in clinical phonology. (2 hrs.)

B) NEUROMOTOR SPEECH DISORDERS

1) Neurophysiology and functional development of motor control. (3 hrs.)

2) Assessment Procedures. Perceptual, Acoustic, and aerodynamic analysis. Formal and Informal tests. (Structural, oro-sensory examination, non-speech, speech). Electromyography and speech imaging. (10 hrs.)

3) Review of different types of dysarthria and apraxia (8 hrs.)

4) Differential diagnosis of motor speech disorders: dysarthria, apraxia and secondary to hearing loss. (2 hrs.)

5) Prognostic issues and treatment procedures for the different types of dysarthrias. (5 hrs.)

6) Treatment of developmental dysarthria, apraxia and phonological disorders with motor speech involvement. (4 hrs.)

7) Future needs in treatment outcome and efficacy research in motor speech disorders (3 hrs.)

8) AAC : overview of AAC for motor speech disorders. (2 hrs.)

9) Current literature and research designs in neuromotor speech disorders. (2 hrs.)

10) Dysphagia
1. Issues in pediatric feeding and swallowing.
2. Neurogenic swallowing disorders. Causes, symptoms and clinical types. Assessment. Intervention. (4 hrs.)

LIST OF BOOKS

CLINICAL PHONOLOGY AND NEUROMOTOR SPEECH DISORDERS

Essential :

Perspectives in Applied Phonology. (1997). Hodson, B.W and Edwards, M.L. Maryland: An Aspen Publication. ISBN 0-8342-0881-4.

Clinical Phonology. Assessment of Articulation Disorders in Children and Adults. (1996). Klein, E.S. California: Singular Publishing Group, Inc. ISBN 1-56593-602-7.

Phonological Theory and the Misarticulating Child. ASHA Monographs. (1984). (Number 22 Ed.) Elbert, M., Dinnsen, D.A. and Weismer, G. ISBN 0066-071X. nd

Phonological Disability in Children. (2 Ed.). Studies in Disorders of Communication. (1989) Ingram. Cole and Whurr Limited. ISBN 1-871381-05-3.

Clinical Management of Motor Speech Disorders in Children. (1999). Caruso, F. J. and Strand, E. A. New York: Thieme. ISBN 86577 – 7624 (TNY). ISBN 3-13-111381-2 G.T.V.

Motor Speech disorders - A Treatment guide. (1991). Dworkin, P.J. St. Louis: Mosby Year Book. Inc. ISBN 155664-223-7.

Clinical Management of Neurogenic Communication Disorders. (1985). Johns, D.E. Boston: Allyn & Bacon.

Motor Speech Disorders: Substrates, Differential diagnosis and Management. (1995). Duffy, J. R. St. Louis: Mosby.

Neuromotor Speech Disorders – Natue, Assessment and Management. (1998). Cannito, M.P., Yorkston, K.M. and Beukelman, D.R.

Evaluation and Treatment of swallowing Disorders. (1983). Logemann, J.

Medical Speech-Language Pathology: A Practitioner's Guide. (1998). Johnson, A.F. and Jacobson, B.H. NY: Thieme. ISBN 0-86577-688-1.

Additional :

Targetting Intelligible Speech. A Phonological approach to rem ediation. (1983) Hodson B.W. and Paden E.P. California: College Hill Press. ISBN 0-933014-28-7.

Developmental Speech Disorders. Clinical Issues and Practical Implications. (Ed.). (1990). Grunwell, P. UK. ISBN: 0-443-03992-5.

The Nature of Phonological Disability in Children. (1981). Grunwell P. London: Academic Press Inc. ISBN 0-12-305250-5.

SH 204 : SEMINARS IN DIAGNOSTIC AUDIOLOGY (75 hrs)

1) **Audiological Diagnostic Instruments** : (6 hrs)
Procurement, installation, calibration and Maintenance.

2) **Hearing Screening** : (6 hrs)
Definition, justification/need for screening types/techniques of Screening, Sensitivity, Specificity, Cost-benefit analysis, Screening procedures with regard to Indian context. Limitations and benefits of screening. Implications with regard to prevention of hearing loss. Issues of abortion, genetic counseling, hearing conservation programs, public awareness programs. Community based prevention approaches. Efforts of WHO and Government of India

3) **Audiological (Puretone, speech & immittance audiometry, Evoked potentials & OAE) and Histopathological findings in :** (10 hrs)
   i) External ear and middle ear diseases
   ii) Meniere's diseases
   iii) Acoustic neuroma
   iv) NIHL and Acoustic Trauma
   v) Ototoxicity
   vi) Presbyacusis
   vii) Sudden hearing loss
   viii) Hearing loss of vascular origin
   ix) Hearing loss associated with systemic diseases
   x) Hereditary deafness - syndromes - advances in genetics
   xi) Auditory neuropathy

4) **Non - Audiological tests in the diagnosis of auditory disorders** : (8 hrs)
   i) Radiological techniques
   ii) ENG
   iii) CT Scan
   iv) Caloric Tests
   v) Other

5) **Assessment of Auditory Disorders in Special Population** : (6 hrs)
Such as deaf-blind, MR, Autism, cerebral palsy, Specific language disorders, attention deficient disorder, hyperacusis.

6) **Central Auditory Disorder** ; (8 hrs)
Theoretical basis, Classifications, conditions in which CAPD exist in adults and in children, behavioral tests, objective tests, co-relation of audiological with non audiological findings in CAPD, influences of linguistic variation in assessment.

7) **Evaluation of patients with vestibular disorders** : (6 hrs)
Harmful effects of vibration on balance mechanism.

8) **Tinnitus:** Condition associated with tinnitus, types of tinnitus, tinnitus evaluation. (6 hrs)

9) **Non-organic hearing loss.** (8 hrs)

10) Comprehensive reporting of audiological findings. Audiologist as a witness in medico-legal cases. (3 hrs)

11) Audiological practice in rural areas, Pediatric set up, Otolaryngological steup, Neurological setup, Industrial setup, School setup. Audiologist as a Private Practitioner. Role and scope of Forensic Audiologist. Medico-legal aspects. Legislations related to the field of Audiology (8hrs)

LIST OF BOOKS

SEMINARS IN DIAGNOSTIC AUDIOLOGY

Alford, B.R. and Jerger, S. (Ed) (1993). Clinical Audiology: The Jerger Perspective. San Diego: Singular Publishing Group, Inc.

Biswas, A. (1995). Clinical audio-vestibulometry for otologists and neurologists. Bombay:Bhalani Publishing House.

Hall, J. W. and Mueller, H.G. (1997) Audiologiests' Desk Reference Volume 1: Diagnostic Audiology Principles, Procedures and Protocols, San Diego: Singular Publishing Group.

Hayes, D and Northern J.L. (1996). Infants and Hearing, San Diego: Singular Publishing Group

Luxon, L.M. and Davis, R.A. (Eds.). (1997). Handbook of vestibular rehabilitation. San Diego: Singular Publising Group, Inc.

Mencher, G.T., Gerber, S.E. and McCombe, A. (1997). Audiology and Auditory Dysfunction. Boston:Allyn and Bacon.

Mendel L.L. and Danhaurer, J.L. (1997). Audiologic evaluation and management and speech perception assessment. San Diego: Singular Publishing Group, Inc.

Musiek, F. E., Baran, J. A. and Pinherio, M.L. (1994). Neuroaudiology: Case studies, San Diego: Singular Publishing Group.
Roland, P.S., Marple, B.F. and Meyerhoff, W.L. (1997). Hearing loss. New York:Thieme.

Ross R. J. (1996). Roeser's Audiology Desk reference: A guide to the Practice of Audiology. New York: Thieme

Sataloff. R.T. and Sataloff, J. (1993) Hearing Loss. New York: Marcel Dekker.

Soucek, S. and Michaels, L. (1990). Hearing Loss in the Elderly: Audiometry, Electrophysiologic and Histopathologic aspects. London: Springer-Verlang.

Van De Water. T. R., Popper, A.N. and Fay. R.R. (Ed) (1996). Clinical aspects of hearing. New York:Springer.

Hall. J. W. (1992). Handbook of Auditory Evoked Responses. Massachussetts. Allyn and Bacon. Ferraro. J. A. (1997). Laboratory exercises in auditory evoked potentials. San Diego:

Singular Publishing Group, Inc.

Hood, L.J. (1998). Clinical applications of auditory brainstem response. San Diego: Singular Publishing Group, Inc.

Jacobson, J.T. (Ed). (1985). Auditory Brainstem Response. London: Taylor and Francis.
McPherson, L.D. (1995). Late potentials of the auditory system, London: Singular Publishing Group.

Katz J. (Eds.) (1994). Handbook of clinical audiology. Baltimore. Williams & Wilkins.

Popelka G.R. (1981). Hearing assessment with the acoustic reflex. New York. Grune & Stratton.

Robinette M. S. and Glattke T.J. (Eds.). (1997). Otoacoustic emissions. Clinical applications. New York : Thieme.

Jerger, J. (1973). Modern Developments in Audiology. New York: Academic Press 45

Katz, J. Stecker, N.A. and Henderson, D. (Eds.). (1992). Central auditory processing: A transdisciplinary view. St. Llouis. Mosby year book.

Rintleman, W.F. (2000). Hearing Assessment. Boston : Allyn and Bacon

Silm an, S. and Silverman, C.A. (1991). Auditory diagnosis: Principles and Applications. San Diego: Academic Press.

Wiley, T.L. and Fowler, C.G. (1997). Acoustic immittance measures in clinical audiology:A prim er. San Diego: Singular Publishing Group, Inc.

Dunn, H.H., Dunn, D.R. and Harford, E.R. (1995). Audiology Business and practice management. San Diego: Singular Publishing Group, Inc.

Katz, J. Stecker N. A. and Henderson, D (Eds). Central auditory processing: A transdisciplinary view. St. Louis: Mosby Year Book.. nd

Schow, L.R, and Nerbonne, A.M. (1989). Perspectives in Audiology series. 2 Ed. Boston: Allyn and Bacon

Recent Journals including:

Audiology and Neurology
Ear and Hearing
Journal of the Acoustical Society of America
Journal of Speech - language hearing research
Scandinavian Audiology
Seminars in hearing

SH 205 HEARING DEVICES (75 hrs)

1. Fundamentals of Digital Signal processing and communication system (15hrs)

a. Analogue and digital system

i. Analogue signal and digital signals
ii. Analogue to digital and digital to analogue converters
iii. Need and advantages of digital systems and digital signal processing

b. Principles of digital signal processing

i) Digital signal processor – how it works?
ii) Basics of HR and FIR filters and their applications in speech and hearing

c. Fundamentals of communication systems

i) AM transmission and reception and its application in speech and hearing
ii) FM transmission and reception and its application in FM hearing aids
iii) Digital modulation techniques such as delta modulation, PCM, PPM, PWM and
iv) Their application in speech analysis
v) Satellite communication and its application in tele-rehabilitation

2 . Advances in technology of hearing aids (15 hrs)

a. Principles and working of

i) Analog, programmable and DSP based hearing aids.
ii) Technology of channel separation
iii) Techniques of non linear amplification and their implementation in hearing aids.
iv) Noise reduction using microphone technology

b. Evaluation of hearing aids

i) Electro acoustic characteristics
ii) National and international standards
iii) Hearing aid evaluation systems and recent advances

3. (15 hrs)

a. Selection of special features in hearing aids with reference to specific clients
b. Tinnitus maskers and their utility
c. ALDs

i) Types: Auditory based, visual based and tactile based ALDs
ii) Recent advances

4. (15 hrs)

a. Cochlear implant

i) Description, types designs and features
ii) Surgical procedure and biological safety in brief
iii) Speech processing strategies

iv) Assessment strategies
v) Post operative measurement – NRT.ESRT, EABR
vi) Mapping
vii)Outcomes

5. (15hrs)

a . Middle ear implant, BAHA, Brainstem implant

i) Description
ii) Selection
iii) Assessment
iv) Management
v) Outcomes.

LIST OF BOOKS
Hearing Devices

Clark G.M: Cowan B.S; Dowel R. C1997. Cochlear Implantation for infants and children: Advances Singular Publishing group Inc

Mueller H.G.; Hawkins D; Northern C.J 1992. Probe microphone measurements; Hearing aid selection and assessment Singular Publishing group Inc

Hersh M.A; Johnson M.A. 2003 - Assistive technology for the hearing implaired, Deaf and deaf blind, springer, London

Sandlin E.R. (Ed) 1995, Handbook of hearing aid amplifications. Volume 1. Theoretical & Technical considerations Singular Publishing Group Inc, London.

Sandlin E.R. (Ed) 1995, Handbook of hearing aid amplifications, Volume II. Clinical Consideration and fitting practices. Singular Publishing group Inc, London

Studenbaker G.A.; Hochberg I 1993. Acoustical factors affecting hearing aid performance. edition Allyn & Bacon U.S.A n d

Velene M 1994 Strategies for selecting and verifying hearing aid fittings Thieme N.Y.
Velente M 1996 Hearing aids standards, option and limitations, Thieme N.Y

SH 206 : ADVANCES IN ADULT LANGUAGE DISORDERS (75 hrs.)

1) Neurological Examination – Cranial nerve examination, motor examination, reflexes. (3 hrs.)

2) Neurological Tests and neuroimaging procedures (EEG, EMG, CT Scan, MRI, Transcranial Doppler Ultra-sonography, PET). Applications to communication disorders. (2 hrs.)

3) Neurobehavioural Testing (Attention, Arousal, Memory, Affect, Visuospatial function, Language, Praxis, Gnosis). (3hrs.)

4) Neurophysiology of aphasia and related disorders. Language and Cerebral dominance. Connectionist explanation of Aphasia. Lesion size, lesion location and aphasia syndrome. Speech-language and the brain. (3 hrs.)

5) Assessment and Diagnosis in Neurocommunication disorders. General Principles, Testing of verbal comprehension, non-verbal skills, verbal expression, functional communication. Test interpretation. Testing right hemisphere function. Assessing the bilingual client. (10 hrs.)

6) Different perspectives in aphasia. (10 hrs.)
   a. Linguistic investigations of aphasia, semantic studies, phonological studies.
   b. Pragmatics and aphasia (including discourse ability).
   c. Aspects of bilingual aphasia.
   d. Aphasia in the illiterate.

7) Advances in aphasia rehabilitation. (10 hrs.)
   a. Psychosocial aspects and sociolinguistic perspectives.
   b. Pragmatic approaches to aphasia rehabilitation.
   c. Rehabilitation of the bilingual aphasic.
   d. Assessment of treatment efficacy in aphasia.

8) Acquired reading and writing disorders. (5 hrs.)

9) Behavioral and Cognitive symptoms of right hemisphere brain damage. Treatment of patients with right hemisphere brain damage. Prognosis, treatment efficacy and outcome. (5 hrs.)

10) Dementia and communication. Causes of dementia, Types of dementia (Cortical, subcortical, vascular, metabolic, toxic etc.). Language changes in dementia. Senile dementia. Bilingual dementia. Assessment and diagnosis. Treatment. Long-term management. (5 hrs)

11) Traumatic Brain Injuries. Penetrating and Non penetrating injuries. Secondary consequences of TBI, Assessment of TBI patients, Rehabilitation of TBI patients, Treatment outcome. (3 hrs.)

12) Characteristics, Assessment, Intervention and Issues in (6 hrs.)
    a. Primary Progressive aphasia
    b. Sub-cortical aphasias
    c. Schizophasia

13) Alternative and Augmentative Communication for the language disordered. (5 hrs.)

14) Review of current literature and research designs in neurogenic language disorders. (5 hrs.)

LIST OF BOOKS

ADVANCES IN ADULT LANGUAGE DISORDERS

An Introduction to Neurogenic Communication Disorders. (4Ed.). (1992). Brookshire, R.H. St. Louis: Mosby Year Book. ISBN 0-8151-1295-5

Aphasia. (1988). Rose, F.C. Whurr, R. and Wyke, M.A. (Eds.) London: Whurr. ISBN 1-870332-66-0

Medical Speech-Language Pathology: A Practitioner's Guide. (1998). Johnson, A.F. and Jacobson, B.H. NY: Thieme. ISBN 0-86577-688-1.

Aspects of Bilingual Aphasia. (1995). Paradis, M. (Ed.). Great Yarmouth: Galliard (Printers) Ltd. ISBN 0-08-0425704

Pragmatics in Neurogenic Communication Disorders. (1998). Paradis, M. Great Yarmouth: Galliard (Printers) Ltd. ISBN 0-08-043065-1.

Linguistic Investigations of Aphasia. (2 Ed.). (1989). Lesser, R. London: Whurr. ISBN 1-870332-77-6.

Right Hemisphere Communication Disorders: Theory and Management. (1995). Tompkins, C.A. California: Singular Publishing Group, Inc. ISBN 1-56593-176-9.

Dementia – A Clinical Approach. (2 Ed). (1992). Cumm ins, J.L. and Benson, D.F. US: Buttemorth – Hienemann. ISBN 0-7506-9065-8.

Pragmatic Approaches to Aphasia Therapy. (1994) Carlom agno, S. London: Whurr. ISBN 1-870332-94-6.

SH 207 : SEMINAR IN MANAGEMENT OF THE HEARING IMPAIRED (75 hrs.)

1) Definitions and classifications of the persons with hearing impairment (2 hrs)

2) Needs of the hearing impaired : (3 hrs)
   a) Infants & children
   b) Adults
   c) Geriatric population
   (Communication, social, educational, economic and vocational needs)

3) Principles of Amplification. Analysis of Amplification Devices. (10 hrs)
   Coupler-gain. Real ear gain. Standards for Hearing aid EAC. Critical evaluation on Indian standards. Hearing aid selection. Procedures including SII (AI), Real ear aided performances, Comparison of various prescriptive formulae, considerations in prescribing: a) Ear level Vs body level aids, b) Digital & programmable Vs analog hearing aids. c) Monaural Vs binaural aids d) bone receiver aids.

4) Assistive Listening Devices, Tactile Devices, Alarm Devices: (4 hrs)
   candidates, components & assessment of benefit and the aid.

5) Ear mould review, types, preparation, selection, modification and (4 hrs)
   current trends.

6) Implantable Devices for the Hearing Impaired: i) Bone anchored aids (10 hrs)
   ii) Middle ear implants iii) Cochlear implants iv) Brainstem implants. Candidacy, components and assessment of benefit for each type listed.
   Cochlear Implants : Types design and features, Speech processor and strategies,
   Post - operative mapping and follow – up

7) Audiological Rehabilitation Programs for infants and children. (8 hrs)
   Hearing aid selection, adjustments of hearing aids, acceptance of hearing aids. Auditory training, pre auditory training assessment - Speech perception Tests. Critical evaluation of various methods of auditory training, speech reading and other communication strategies.

8) Therapeutic Consideration: (8 hrs)
   Purpose of Language: Communication, Education, Entertainment. Language for Pre-school hearing impaired child - Verbal, Sign or bilingualism? Effect of conductive loss on language development. Parent-Infant Programs.

9) Educational Placement: Options available. Means/medium of (8 hrs)
   communication in the class room. Controversies over different approaches. Choice of placement. Design and acoustics of

classrooms for the hearing impaired.

10) Management of CAPD Cases: Choice of management based on audiological test results, environmental modification, devices. Auditory perceptual training, communication strategies, cognitive/language m anagement, recording improvement in therapy. (8 hrs)

11) Audiological Rehabilitation Programs for adults and geriatrics. Hearing aid adjustment, selection of Assistive Listening Devices. Speech reading and other communication strategies. Occupational noise exposure, DRC, provision of EPDS. Factors to be considered for selection of EPDS. (6 hrs)

12) Process, care and issues in disability evaluation and certification, Implications. Counter Test, high and low predictability words (5PIN test), MAC test etc. (4 hrs)

13) Counseling – meaning, scope – principles of counseling – types of counseling – individual, group and family, parental, vocational, educational, rehabilitative – behavioral counseling in the context of hearing impairment. (4hrs)

14) Special psychotherapies – play therapy, group therapy, family therapy, psychodrama – intensive psychotherapy, brief psychotherapy to children with hearing impairment. (3hrs)

LIST OF BOOKS
SEMINAR IN MANAGEMENT OF THE HEARING IMPAIRED

Markides, A. (1977). Binaural Hearing Aids. London: Academic Press.

Richard, M. W. (1999). Auditory Perception - A new analysis and synthesis. UK: Cambridge University Press.

Goodman, J.C. and Nusbaum. (Eds). (1994). The Development of Speech Perception: The Transition from Speech Sounds to Spoken Words. London: A Bradford Book, The MIT Press

Kent R.D. and Read C. (1995). The Acoustic Analysis of Speech. New Delhi: A.I.T.B.S. Publishers and Distributors.

Crowder, R.G. (1990). The Role of Auditory Mem ory in Speech Perception and Discrimination. SR 621 P. 187-205. Statue Report on Speech Research, Haskins Laboratories, New Haven, Conn.

Nerbonne, M.A. and Schow R.K. (1989). Auditory Stimuli in Communication. In R.L. Scho and M. A. Nerbonne
(Eds.), 2 edition, Introduction to Aural Rehabilitation. Boston: Allyn and Bacon.

Schouten, M.E.H (1992). (Ed). The Auditory processing of Speech- From Sound to Words. Berlin: Mouton de Gruyter.

Parasnis, I. and Samar, V.J. (1982). Visual Perception of Verbal Information by deaf people. In D.G. Sims, G.G. Walter and R.L. Whitehead (Eds). Deafness and Communication. Baltimore: Williams and Wilkins.

Owens E. and Kessler D.K. (1989). (Eds.) Cochlear Implants in Young Deaf Children. Boston: College-Hill Publication, Little, Brown and Company.

Plant, G. and Spens, K. E. (1995) (Ed). Profound Deafness and Speech Communication. London: Whurr Publishers Ltd.,

Revoile, S. G. and Pickett, L.M. (1982). Speech Perception by the Severely Hearing Impaired. In D.G. Sims, D.G. Walter and R.L. Whitehead (Eds). Deafness and Communication. Baltimore: Williams and Wilkins.

Sanders, D.A. (1982). Aural Rehabilitation. A Management Model. (2Ed.). New Jersey: Prentice-Hall, Inc.

Summerfield, A.Q. (1983). Audio-Visual Speech Perception, lip reading, and Artificial Stimulation : In M.E. Lutman, M.P. Haggard (Eds.). Hearing Science and Hearing Disorders. London: Academic Press.

Tyler, R.S. (1993). Ed. Cochlear Implants- Audiological Foundations. San Diego: Singular Publishing Group, Inc. (Chapters 4 & 5).

Balley, P. J. (1983). Hearing for Speech: The Information Transmitted in Normal Impaired and Speech. In M.E. Lutman and M.P., Haggard (Eds.), Hearing Science and Hearing Disorders. London: Academic Press.

Clark, G.M. Cowan, R.S.C. And Richard, C.D. (1997). Cochlear Implantation for Infants and Children. Advances, London: Singular Publishing Group, Inc.

Cooper, H. (1991). (Ed). Cochlear implants- A practial guide. London: Whurr Publishers Ltd.

De Filippo, C.L. (1982). Tactile perception. In D.G. Sim s, G.C. Water and R.L. Whiteheard. (Eds.). Deafness and communication. Baltimore: Williams & Wilkins.

Erber, N. P. (1982). Auditory Training. Washington D.C: A.G. Bell Association for the Deaf. (Chapter 2).

Ling D. (1976). Speech and the hearing impaired child - theory and practice. Washington: The Alexander Graham Bell Association for the Deaf.

Miller, J.L. and Eimas, P.D. (1995). (Eds.). Speech, language and communication. New York: Academic Press.

Bellis, T.J. (1996). Assessment and management of central auditory processing disorders in the educational setting - form science to practice. London: Singular Publishing Group, Inc.

Chermak, G.D. and Musiek, F.E. (1997). Central Auditory processing disorders - New Perspectives, San Diego: Singular Publishing Group, Inc.

Heasley, B.E. (1980). Auditory processing disorders and remediation, (2Ed.) Illinois.

Charles C. Thomas Publisher.

Valente, M (1996) Hearing Aid standards, options and limitations. New York: Thieme Medical Publishers, Inc.

Willeford, J. A., Burleigh, J.M. (1985). Handbook of CAPD in children. Orlando:Grune & Stratton Inc.

Studebaker, G.A. and Hochberg, I. (1993). Accoustical factors affecting hearing aid nd performance. 2 Ed. Boston: Allyn & Bacon.

Summers R.I. (1992). Tactile aids for the hearing impaired. London: Whurr Publishers.

Valente, M. (1994). Strategies for selecting and verifying hearing aid fittings. New York: Thieme Medical Publishers.

Davis, J.M. and Hardick, E.J. (1981). Rehabilitative audiology for children and adults. Canada: John Wiley and sons, Inc.

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

Geoff, P., Karl-Erick, S. (1995). Profound deafness and speech communication. London: Whurr Publishers Ltd.

Levitt, H, Pickett, J.M. and Houde, R.A. (1980). Sensory aids for the hearing impaired. New York: IEEE Press Inc.

Mueller, H.G., Hawkins D. and Northern, L.J. (1992). Probe microphone measurements: Hearing aid Selection and assessment. San Diego: Singular Publishing Group, Inc.

Sanders, A.D. (1993), Management of hearing handicapped-infants to elderly. New Jersey: Prentice Hall, Inc.

Sanders, A, D, (1982). Aural rehabilitation-A management model. 2Ed. New Jersey. Prentice-Hall, Inc.

Sandlin, E.R. (1994).Understanding digitally programmable hearing aids. Boston: Allyn & Bancon.

Sandlin, E. R. (Ed.). (1995). Handook of hearing aid amplification - Clinical considerations and fitting practices. Vol. II. San Diego: Singular Publishing Group, Inc.

Sandlin, E. R. (Ed.). (1995). Handbook of hearing aid amplification - theoretical and technical considerations Vol. I. San Diego: Singular Publishing Group, Inc.

Stokes, J. (Ed.). (2000). Hearing impaired infants: Support in the first 18 months London: Whurr publishers.

Clark, G.M. Cowan, B.S. and Dowell, R.C. (1997). Cochlear implantation for infants and children: Advances. San Diego:Singular Publishing Group, Inc.

Owens, E., Kessler, K.D. (Edrs.) (1989). Cochlear implants - in young deaf children. Boston: Little Brown & Co.

Narasimhan N.C. and Mukherjee, A.K. (1986). Disability - a continuing challenge, Bangalore: Wiley Eastern Ltd.

Pandey, R and Advani, L. (1995). Perspectives in disability and rehabilitation, New Delhi: Vikas publication house.

Status of the disability in India 2000, RCI Publications.

COUNSELING

Testing and Assessment in Counselling Practice, 2Edition – Edited by – C. Edward Watkins, JR., Vieki L. Campbell. 2000 by Lawrence Erlbaum Associates, Publishers Mahwah, New Jersey, London.

Counselling People with Communication Problems – Peggy Dalton – 1994 – SAGE Publications, London, Thousand Oaks, New Delhi.

Introduction to Counselling and Psychotherapy. Edited by Stephen Palmer. 2000 First Publication, SAGE Publications, London, Thousand Oaks, New Delhi.

Introduction to Counselling Skills – Richard Nelson – Jones – 2000 SAGE Publications Ltd., London, Thousand Oaks, New Delhi.

CLINICAL PRACTICUM IN SPEECH-LANGUAGE PATHOLOGY

Objectives:

At the end of the year the student will be able to:

1) Handle special clinical population for group therapy.

2) Acquire proficiency in counseling clients and fam ilies.

3) Acquire skills in imparting information to student groups.

4) To develop skills in presentation of research papers.

Clinical Practicum Work:

1) Plan and execute minimum of 5 group therapy sessions for any communication disordered group (aphasics / autistic / stutterers / voice disorders / hearing impaired toddlers).

2) To develop proficiency in planning and executing counseling / guidance sessions for groups of caregivers / clients.

3) To take up one specific topic as a teaching assignment for graduates.

4) To present a journal article in a students' forum.

5) To demonstrate ability to function as an independent clinician.

CLINICAL PRACTICUM IN AUDIOLOGY

1) The operation of all the equipment's used for evaluation and calibration.

2) Thorough in administration and interpretation of all special tests.

3) Explanation of atypical findings and differentiation between artifacts and atypical findings

4) Trouble shoot the audiometer and ability to rectify independently.

5) Be fam iliar with recording and interpreting auditory evoked potentials such as MLR, LLR and P 3000 Evaluate and trouble shooting of hearing aids.

6) a) Be able to suggest ways of modifying electroacoustic output of hearing aids to suit the needs of the patient.
   b) Have knowledge in and assist in carrying cut insertion gain m easurement.

7) Counseling the client/parent/regarding home training/hearing aid care/speech reading and auditory training.

8) Trouble shooting of hearing aids. To apply knowledge of electroacoustics for classification

of hearing aids and recommendation for different types of patients.

In addition to clinical examination, evaluation and management in terms of choice is specificity of the procedures used, they shall comply with the following specific requirements.

1) Preparing audio-cassettes for (i) increasing public awareness with respect to profession (ii) counseling of the case & or SOPs.

2) Comparison of behavioral and biophysical evaluation of hearing on two normal individuals and one each of conductive and sensori-neural loss.

3) Comparison of psychoacoustic and objective evaluations of hearing aids in two individuals (one child and one adult with hearing impairment).

4) Improving public awareness in the profession by paying visits to schools talking to X and XII Standard students regarding the profession and orienting other professional groups i.e. pediatricians neurologists, GP etc.

5) Screening programs in schools.

6) One detailed report (in a formal for journal publication) in one of the following categories (I) Diagnostic (II) Hearing Aid Evaluation (III) Other Rehabilitative Management.

Q.P Code: **Reg. No: ……**

SECOND YEAR MASLP EXAMINATIONS

(Model Question)

ADVANCES IN LANGUAGE ACQUISITION AND CHILDHOOD LANGUAGE DISORDERS

Time: 3hrs Max marks: 80

- ***Answer all questions***
- ***Draw diagrams wherever necessary***

Essays: **(5x16=80)**

1. Describe the application of language acquisition theories in the assessment and intervention of speech and language disorders (16)
2. Explain the role of memory in language acquisition. Briefly mention about the models of memory (8+8)
3. What is LLD. Explain the assessment and management procedures for LLD. (4+12)
4. What is spoken word recognition. Explain the models of spoken word recognition. (4+12)
5. Write short notes on (4+4+4+4)
   - Language development in twins
   - Types of attention
   - Language characteristics in autism
   - Phonological awareness

****

Q.P Code: **Reg. No: ……**

SECOND YEAR MASLP EXAMINATIONS

(Model Question)

SPEECH PERCEPTION AND ITS DISORDES

Time: 3hrs Max marks: 80

- ***Answer all questions***
- ***Draw diagrams wherever necessary***

Essays: **(5x16=80)**

1. Explain the acoustic theory of speech perception. (16)
2. Describe in detail about the factors affecting dichotic listening. (16)
3. Explain briefly about perception of consonants in hard of hearing. (16)
4. Explain about the perception of speech through cochlear implants. (16)
5. Write short notes on (4+4+4+4)

- Co-articulation
- Memory
- Articulatory synthesis
- Visual word recognition

****

Q.P Code: **Reg. No: ……**

SECOND YEAR MASLP EXAMINATIONS

(Model Question)

CLINICAL PHONOLOGY AND NEUROMOTOR SPEECH DISORDERS

Time: 3hrs Max marks: 80

- ***Answer all questions***
- ***Draw diagrams wherever necessary***

Essays: **(5x16=80)**

1. Critically evaluate the theories of phonological development. (16)
2. Explain the efficiency of different treatment methods for phonological disorders with the support of literature. (16)
3. Explain about the functional development of motor control. (16)
4. Describe dysarthria and its types (16)
5. Describe the speech and language characteristics of apraxia of speech. (16)

****

Q.P Code: **Reg. No: ……**

SECOND YEAR MASLP EXAMINATIONS

(Model Question)

DIAGNOSTIC AUDIOLOGY

Time: 3hrs Max marks: 80

- ***Answer all questions***
- ***Draw diagrams wherever necessary***

Essays: **(5x16=80)**

1. Describe in detail about the calibration of pure tone audiometer. (16)
2. Explain the audiological findings in (8+8)
   - Meniere's disease
   - Auditory neuropathy
3. Explain about the tests for assessing central auditory processing disorder (16)
4. Describe about the assessment of a patient with vestibular dysfunction. (16)
5. Write short notes on (4+4+4+4)
   - Importance of neo-natal hearing screening
   - CT scan in the diagnosis of auditory disorder
   - Tinnitus evaluation
   - Forensic audiologist

****

Q.P Code: **Reg. No: ……**

SECOND YEAR MASLP EXAMINATIONS

(Model Question)

HEARING DEVICES

Time: 3hrs Max marks: 80

- ***Answer all questions***
- ***Draw diagrams wherever necessary***

Essays: **(5x16=80)**

1. Explain about DSP. Mention about the advantages of digital hearing aids. (10+6)
2. Describe the electro acoustic characteristics of hearing aids. (16)
3. What is CI. Mention about the candidacy for CI. Describe about different speech processing strategies used in CI. (2+6+8)
4. Explain about different types of ALDs. (16)
5. Write short notes on (4+4+4+4)
   - BAHA
   - Brainstem implant
   - Tinnitus maskers
   - Satellite communication

****

Q.P Code: **Reg. No: ……**

SECOND YEAR MASLP EXAMINATIONS

(Model Question)

ADULT LANGUAGE DISORDERS

Time: 3hrs Max marks: 80

- ***Answer all questions***
- ***Draw diagrams wherever necessary***

Essays: **(5x16=80)**

1. Explain in detail about the neurophysiology of language. (16)
2. Explain about the linguistic investigation of aphasia. (16)
3. Define RHD. Explain the language, behavioral and cognitive symptoms of RHD (16)
4. Define and classify dementia. Explain the speech and language characteristics in dementia. (2+6+8)
5. Write short notes on (4+4+4+4)
   - TBI
   - Primary progressive aphasia
   - Sub-cortical aphasia
   - Test of verbal communication in aphasia

****

Q.P Code: **Reg. No: ……**

SECOND YEAR MASLP EXAMINATIONS

(Model Question)

ADVANCES IN THE MANAGEMENT OF PERSONS WITH HEARING DISORDERS

Time: 3hrs Max marks: 80

- ***Answer all questions***
- ***Draw diagrams wherever necessary***

Essays: **(5x16=80)**

1. Describe the management of central auditory processing disorders. (16)
2. What is auditory training. Explain the various steps in auditory training (16)
3. Explain about the electro acoustic characteristics of hearing aids (16)
4. What is an ear mould and mention its types. Explain about the acoustic modifications of ear mould and their advantages. (2+4+10)
5. Write short notes on (4+4+4+4)
   - BAHA
   - Candidacy for cochlear implant
   - EPD
   - Educational placement for hearing impaired

****