

## **MSC. Audiology**

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

- i. Function as teachers and researchers in institutions of higher learning,
- ii. Diagnose and manage disorders of hearing and balance across life span,
- iii. Counsel and guide persons with disorders of hearing and balance as well as their family members, Implement rehabilitation programs for persons with hearing and balance disorders
- iv. To function as the disability certification authority in the field,
- v. Liaise with professionals in allied fields and other stake holders
- vi. Implement prevention and public education programs
- vii. Undertake advocacy measures on behalf of and for persons with hearing and balance disorders
- viii. Advise government and other institutions on legal and policy issues related to persons with hearing and balance disorders, and
- ix. To establish and administer institutions of higher learning in the area.

## **COURSE OBJECTIVES**

### **2.1 Semester I**

#### **2.1.1 A 101: Research Methods, Statistics & Epidemiology**

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

1. Clinical research designs and statistical methods,
2. Epidemiological issues and its relevance in hearing research,
3. Evidence based practice in Audiology, and
4. Ethical practices in research

#### **2.1.2 A 102: Technology in Audiology Hour**

1. To give an overview of the latest technology involved in Audiology, Signal processing, Instrumentation etc.
2. To learn the various signal processing strategies used in hearing aid amplification, noise reduction, channel based gain and output control.
3. To understand and observe the principle of working and functioning of equipments used for measurement of sounds and calibration of diagnostic equipments.
4. To learn practically the procedure for calibration of audiometers, middle ear analyzer, Otoacoustic emission analyzer, BERA etc.
5. To lay the foundation of ICT (Information and Communication Technology) concepts and illustrate the applications of ICT in Audiology
6. To demonstrate practically the concepts in basic principle of operation of transducers, amplifiers, display units and other signal processing and signal acquisition elements of bio medical instrumentation in speech and hearing.
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### **2.1.3. A 103: Cochlear Physiology**

After going through this subject, the student shall be able to describe:

1. The different parts of the peripheral auditory system
2. The functioning of normal peripheral auditory system
3. The methods used to study auditory physiology
4. Give insights into the physiological basis of physiological tests used for hearing assessment
5. Applying the knowledge of auditory physiology to take appropriate clinical decisions

### **2.1.4. A 104: Physiological Assessment of Hearing**

Objectives: After going through this subject, the student shall be able to describe:

1. Describe the bases of physiological tests
2. Interpret physiological test findings
3. Explain the importance of different tests required for assessment of physiological mechanism of auditory system.
4. To select appropriate test parameters for assessing conductive and sensorineural mechanism

### **2.1.5. A 105: Hearing Sciences**

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

1. Understand psychophysical components of sound and their measurement,
2. Analyse and critically evaluate the different methods of estimation of thresholds, frequency analysis and application of masking, and
3. Conduct experiments to estimate thresholds, measure pitch.

## **2.2. SEMESTER II**

### **2.2.1 A 201: Neurophysiology of Hearing**

**Objectives:** After going through this subject, the student shall be able to describe:

1. The different parts of the auditory nervous system and efferent auditory system
2. The functioning of normal auditory nervous system and efferent auditory system
3. The methods used in auditory neurophysiology
4. Give insights into the physiological basis of electrophysiological tests used for hearing assessment
5. Applying the knowledge of auditory neurophysiology to take appropriate clinical decisions

### **2.2.2. A 202: Auditory Perception**

After completing this course, the student will be able to

1. Understand the processes involved in the perception of speech by persons with normal and impaired hearing, and
2. Apply principles of speech perception in therapy and research.

### **2.2.3 A 203: Auditory Disorders Marks -**

After completing this course, the student will be able to

1. Explain the pathophysiology of auditory disorders,

2. Diagnose and differentially diagnose auditory disorders, and
3. Recommend appropriate management options for the clients with hearing loss.

#### **2.2.4 A 204: Advances in the Management of Hearing Loss**

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

1. Understand the different amplification/assistive devices and their changing technology
2. Explain the strategies of device selection and optimization
3. Develop need-based programs and intervention strategies for persons with different types of hearing impairment across age groups, and
4. To list specific needs and know psychosocial and communicative demands and strategies to solve these

#### **2.2.5 A 106 & A 205: Clinicals in Audiology**

1. General considerations: The student should be able to carry out complete audiological evaluation and management of persons with hearing impairment.
2. After completion of clinical postings, the student will have the ability to apply, show (in a clinical diary/log book), and perform the following on patients/clients:

### **2.3. Semester III**

#### **2.3.1 A 301: Genetics of Hearing and Pediatric Audiology**

After completing this course, the student will be able to

1. understand the genetic basis for hearing loss]
2. understand the tests/procedures for identifying genes for hearing loss
3. counsel parents or caregivers of children with genetic and non-genetic hearing loss
4. carry out screening programs to identify hearing loss using appropriate protocols, and
5. diagnose and manage hearing loss in children using appropriate tests/protocols and aural management procedures

#### **2.3.2. A 302: Electrophysiological Assessment**

After completing this course, the student will be able to

1. describe and classify auditory evoked potentials,
2. understand the technology for recording auditory evoked potentials,
3. record and interpret exogenous and endogenous potentials,
4. use appropriate protocols for recording exogenous and endogenous potentials for clinical and research purposes, and
5. understand research needs in auditory evoked potentials

#### **2.3.3. A303: Speech Perception**

Objectives: After completing this course, the candidate should be able to

1. Explain coding of speech in the auditory pathway in normal hearing individuals
2. Explain basic concepts regarding speech perception
3. Critically evaluate theories of speech perception and methods to synthesis speech
4. Describe the major and minor acoustic cues for speech perception in normal hearing individuals
5. Explain about speech perception in relation to short term memory

6. Describe aspects related to dichotic speech perception
7. Explain infant and animal speech perception

#### **2.3.4 A 304: Auditory Processing Disorders**

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

1. Diagnose and differentially diagnose auditory processing disorders (apds) and explain their physiological bases,
2. Administer different tests for diagnosis and interpret the findings including correlation with findings from imaging and cognitive studies,
3. Institute screening and public education programs in different setups on apds,
4. Identify and explain factors influencing assessment of apds,
5. Advise clinical clientele on management of APDS including guidance on aids and appliances, and
6. Advise and liaise with members of the management team like neurologists, neurosurgeons on the diagnosis as well as management of apds.

#### **2.3.5. A 305: Vestibular System and its Disorders**

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

1. Describe the functioning of the balance and vestibular system
2. Explain the disorders of the vestibular system
3. Assess vestibular system using appropriate tests/protocols
4. Recommend appropriate management option for persons with vestibular dysfunction
5. Counsel and guide the clinical clientele with vestibular disorders on quality of life etc.

### **2.4 SEMESTER IV**

#### **2.4.1. A 401: Audiology in Practice**

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

1. Know the role of an audiologist in different set-ups.
2. Liaise with other professionals in setting-up an audiology clinic.
3. Audit audiology practices in existing set-ups.
4. Implement acts and legislations relating to persons with hearing impairment
5. Advise Governments and other agencies on the formulation of policies and legislative acts relating to hearing disability
6. Understand the legal implications of practice in audiology.

#### **2.4.2. A 402: Implantable Auditory Devices**

At the end of the course, the student should be able to

1. Identify and describe the types of implantable hearing devices,
2. Describe the purpose of different components of implantable hearing devices,
3. Determine candidacy for implantable hearing devices,
4. Assess benefits from implantable hearing devices and guide the clinical population, and
5. Understand and contribute to formulation Government policies and schemes relating to implantable hearing devices

#### **2.4.3. A 403: Speech Perception in Clinical Population**

Objectives:

1. After completing this course, the candidate should be able to
2. Explain about speech perception in individuals with different configurations, types, degrees of hearing impairment
3. Differentiate / compare perception of speech through different senses and listening devices
4. Critically examine different methods to evaluate speech intelligibility, and describe the factors effecting speech intelligibility
5. Apply information on speech intelligibility / speech perception in the field of speech and hearing

#### **2.4.4. A 306 &A 405 Clinicals in Audiology**

General considerations

1. The student should be able to carry out complete audiological evaluation and management of persons with hearing impairment.
2. After completion of clinical postings, the student will have the ability to apply, show (in a clinical diary/log book), and perform the following on patients/clients: