

Curriculum for

**Post-Doctoral Fellowship Course**

in

**Neuro-otology vertigo and cochlear  
implant**



**SRI AUROBINDO UNIVERSITY**

SAIMS HOSPITAL CAMPUS, Indore Ujjain, State Highway, Bhawrasla, Indore, Madhya  
Pradesh 453555

## CURRICULUM

**Course – Post doctoral fellowship in Neuro-otology vertigo and cochlear implant Duration – 11 months.**

This extensive 11-month course is designed as a complete Neuro-otology course for the resident or fellow in training or as an update for the practicing otolaryngologist. The course seeks to improve the surgical skill of participants and review of topics in neurotology, vertigo and cochlear implant.

Upon completion of the course, participants will understand clinical decision making and will have improved knowledge on ear implants and basic sciences skills.

- Course Format & Training Schedule:

The fellowship program is divided into 3 sessions,

Session 1 (Duration = 3 months):–

Out-patient clinical exposure at the Implant Otology clinic for working up of patients, who will need Implantable hearing devices. The out-patient training includes direct interaction with patients for arriving at a clinical diagnosis, learning pre-operative work up protocols including knowledge of interpretation of high resolution temporal bone imaging & advanced objective audiological test battery which includes Otoacoustic Emissions, Brainstem Evoked Response Audiometry & Auditory Steady State Responses. Special training is given in the Vestibular Laboratory with Video Oculography & Vestibular Evoked Myogenic Potential

testing done for patients with neurotology disorders. A detailed session is also dedicated to provide experience in pre-operative counseling of patients for various implants & explain the possible outcomes.

Session 2 (Duration = 6 months):– Supervised microsurgical dissection on dry & wet temporal bone specimens, in the temporal bone lab for learning implantation skills.. Higher surgical training in OR for various procedures like – Cochlear Implants and otologic procedures . Focus is on training in the various techniques of ear implantation, with exposure to intra-operative electrophysiology. Per-operative management of the patient is an integral part of this session.

Session 3 (Duration = 3 months):– Exposure to post-operative audiological procedures like Switch-On, Mapping & programming the implanted devices will be given at the Advanced Electrophysiological Lab. Hands-on training in different methods of auditory-verbal habilitation at the Hearing Habilitation Centre, MERF-Institute of Speech & Hearing (MERF-ISH).

## Course Syllabus:

### Unit I - Basic Sciences

- Embryology of the Auditory System
- Neurotology & skull base anatomy
- Micro-anatomy of the Cochlea & its neural connections
- Physiology of Auditory & Vestibular System
- Pathology & Immunology of the Ear
- Bio-films in relation to Ear Implants
- Osseo-integration Principle
- Syndromic & Non-syndromic Hearing Loss
- Genetic & Hereditary factors in Hearing Loss
- Stem cells & growth factors in Hearing Restoration
- Asepsis & Anti-sepsis protocols in Implant OR

- Recent Advances & Future Directions in Implant Otology

## Unit II - Evaluation of the Auditory System

- Tests for Cochlear & Retro-cochlear function
- Radio-Imaging of the Auditory System
- Electrophysiological assessment of hearing
- Auditory Evoked Responses & Psychophysics
- Neurological assessment in relevance to Auditory System

## Unit III - Clinical Aspects of Implant Otology

- Candidacy for Implantation
- Current Protocols in Implantation
- Design & Structure of Implants – CI / ABI / TIHA / BAHA / MEI
- Bio-materials in Implant Otology
- Surgical Principles in Implantation of the Ear
- Hearing preservation concepts & techniques in implantation
- Antibiotics in surgical prophylaxis
- Recent Advances in Ear Implants
- Binaural Implantation & its benefits
- Hybrid Implants / Electro-acoustic Hearing
- Pharmacotherapeutics used in Neurotology practice

## Unit IV - Post Implantation Assessment

- Programming protocols & Mapping Technology
- Software Programs for assessing Implant function
- Behavioural Response Audiometry / Implant aided Audiometry
- Electrophysiological tests - Uses & limitations
- Speech Processing Strategies in Cochlear Implantation
- Auditory Verbal Habilitation
- Outcomes with Implantation
- Long term effects of Implantation
- Quality of life measurement
- Psycho-social factors influencing hearing development

- Challenges unique to the Indian Scenario

#### Unit V – Applied vestibular system course

- Introduction and course overview + Anat. & Phys of Vest system
- Integration of sensory & motor systems
- History and symptoms of vestibular disorders, clinical tests
- The vestibular lab - technical aspects
- The test battery - Oculomotor, positioning, positional, calorics
- BPPV & Spontaneous nystagmus Positional tests
- Caloric Evaluation Posturography, Rotary Chair
- Unilateral vestibular loss, Complete vestibular loss
- Problems of Nonvestibular Origin
- Vestibular diseases & management in the ageing population
- Peeking at the otolithic system VEMP cervical and ocular vHIT Echog G

The training will conclude after submission of a Research project. Final reports and upon clearing a university level exam which include Grand Viva. Upon successful completion the candidate will be awarded a certified fellowship by the Department and University.