

**P.G. Curriculum
M.S. Otorhinolaryngology
Index**

1. Goals
2. Objectives
3. Syllabus
4. Teaching program
5. Posting
6. Thesis
7. Assessment
8. Job responsibilities
9. Suggested books
10. Model Test Papers

P.G. Curriculum M.S. Otorhinolaryngology

The infrastructures and faculty will be as per MCI guidelines.

1. Goals

The goals of MS course in ENT are to produce a competent Otolaryngologist who:

- ❖ Recognizes the health needs of ENT patients and carries out professional obligations in keeping with principles of National Health Policy and professional ethics.
- ❖ Has the acquired competencies pertaining to ENT that are required to be practiced in the community and that all levels of health care system.
- ❖ Has acquired skills in effectively communicating with the patient, family and community.
- ❖ Is aware of the contemporary advances and developments in medical science as related to Otolaryngology.
- ❖ Is oriented to principles of research methodology.
- ❖ Has acquired skills in educating medical and paramedical professionals.

2. Objectives

At the end of MS course in ENT, the student will be able to:

- ❖ Practice the specialty of Otolaryngology in keeping with the principles of professional ethics.
- ❖ Recognize the key importance of deafness control programme in the context of health priority of the country.
- ❖ Take detailed history; perform physical and local ENT examination including Indirect Laryngoscopy, Anterior, Posterior rhinoscopy, otoscopy, audiometric assessment and interpretation.
- ❖ Perform relevant investigative and therapeutic procedures for the ENT patient.
- ❖ Interpret important imaging and laboratory results.
- ❖ Diagnose ENT problems based on the analysis of history, physical examination and investigative work up.
- ❖ Plan and deliver comprehensive treatment for ENT pathologies. .
- ❖ Plan and advice measures for the prevention of deafness, allergies, head neck cancers and to plan rehabilitation accordingly.
- ❖ Manage ENT emergencies efficiently.
- ❖ Demonstrate skills in documentations of case details and of morbidity and mortality data relevant to the assigned situation.
- ❖ Demonstrate empathy and humane approach towards patients and their families and respect their emotions.
- ❖ Demonstrate communicate skills in explaining management and prognosis, providing counseling and giving health education messages to patients and their families.
- ❖ Develop skills as self directed learner, recognize continuing educational needs, use appropriate resources and critically analyze relevant published literature in order to practice, evidence, based otolaryngology.

- ❖ Demonstrate competence in basic concepts of research methodology and epidemiology.
- ❖ Facilitate learning of medical/nursing students, practicing physicians, Paramedical health workers and other providers as a teacher trainer.
- ❖ Play the assigned role in the implementation of national deafness programs, effectively and responsibly.
- ❖ Organize and supervise the desired managerial and leadership skills.
- ❖ Function as a productive member of a team engaged in health care, research and education.

3. Syllabus

General guidelines: during the training period efforts will always be made that adequate time is spent in discussing ENT problems of public health importance in the country.

3.1 Theory

➤ Basic Sciences

★ Ear

- Anatomy embryology and ultrastructure of the human ear.
- Physiology of hearing.
- Assessment of hearing.
- Hearing loss.
- Physiology of equilibrium and its application to the dizzy patient.
- Assessment of vestibular function
- Eustachean tube anatomy and physiology
- Facial nerve
- Temporal bone

★ Audiology

- Audiometry and masking.
- Tympanometry
- BERA

★ Nose and Paranasal Sinuses

- Anatomy and Embryology.
- Physiology.
- Pathophysiology of the ears and nasal sinuses in flight and diving.
- Nasal Septum.
- Evaluation of the nasal airway (Rhinomanometry)

★ Oral cavity

- The embryology /anatomy of mouth and related faciomaxillary structure
- Embryology/anatomy and physiology of salivary glands

★ Pharynx and oesophagus

- Anatomy, embryogenesis and physiology of pharynx
- Anatomy and embryogenesis of oesophagus and its relations
- Physiology of deglutination

★ Larynx and tracheobronchial tree

- Anatomy and embryology
- Physiology of respiration
- Physiology of phonation

★ Skull base

- Surgical anatomy
- Clinical neuroanatomy
- ★ **Neck**
 - Facial spaces of head and neck
 - Lymph nodes of head and neck
 - Thyroid gland
- ★ **Imaging and Radiology**
 - Image taking and interpretation of
 - Ultrasound
 - Angiography
 - Dacrocystography
 - X-rays
 - CT
 - MRI
 - Barium studies
 - Contrast studies etc with respect to ENT
- ★ Basic immunology
- ★ Microbiology as related to ENT
- ★ Wound healing principle
- ★ Intensive care in ENT patients
- ★ Anesthesia in ENT
- ★ Biomaterials used in ENT
- ★ Medical negligence in otolaryngology
- ★ Principle of chemotherapy
- ★ Principle of radiotherapy
- ★ Principle and use of nuclear medicine
- ★ Principles of laser surgery
- **Disorders: Their Medical/Surgical Management**
 - ★ **Ear**
 - Etiology and management of inflammatory condition of external and middle ear
 - Pathology of cochlea
 - Pathology of vestibular ear
 - Diseases of external ear
 - Diseases of Eustachian tube
 - Ear trauma
 - Management of CSOM and cholesteatoma.
 - Complications of CSOM and their management
 - Otosclerosis etiopathogenesis and management
 - Menier's disease etiopathogenesis and management
 - Sensorineural hearing loss causes and management
 - Vertigo
 - Otagia causes and management
 - Tinnitus causes and management
 - Ototoxicity
 - Acoustic neuroma
 - Epithelial tumours of EAC and middle ear
 - Glomous tumour of ear

- Facial nerve disorder, etiopathogenesis and management
- Cochlear implants
- Rehabilitation of hearing impaired
- Reconstruction of ear
- ★ **Nose and paranasal sinuses**
 - Conditions of external nose
 - Abnormalities of smell
 - Mechanism and treatment of allergic rhinitis
 - Food allergy and rhinitis
 - Infective rhinitis and sinusitis
 - Complications of sinusitis
 - Intrinsic rhinitis
 - Nasal polyps
 - CSF rhinorrhoea
 - Fracture of facial skeleton
 - Rhinoplasty
 - Epistaxis
 - Snoring and sleep apnea
 - Non healing granulomas of nose
 - Facial pain and headache
 - Aspects of dental surgery for ENT
 - Trans sphenoidal hypophysectomy
 - The orbit with relation with nose
 - Cysts, granulomas and tumours of jaws, nose and sinuses
 - Deviated septum and septoplasty
 - Neoplasm of nasal cavity
 - Neoplasm of PNS
- ★ **Oral cavity and Salivary Glands**
 - Common disorder of oral cavity
 - Tumors of oral cavity
 - Non neoplastic disorder of oral cavity
 - Neoplasm of salivary gland 1.benign 2.malignant
- ★ **Pharynx and Esophagus**
 - Acute and chronic infection of pharynx
 - Neurological affective of pharynx
 - Pharyngeal pouches
 - Abscesses in relation to the pharynx
 - Angiofibroma
 - Nasopharyngeal malignancy
 - Tumours of oropharynx and lymphomas of head and neck
 - Tumours of hypopharynx
 - The oesophagus in otolaryngology.
 - Dysphagia
 - Foreign bodies of food passage
- ★ **Larynx**
 - Acute and chronic laryngitis
 - Disorders of voice
 - Management of obstructive airway and tracheostomy
 - Trauma and stenosis of larynx
 - Neurological affections of larynx

- Tumours of larynx (benign & malignant)
- Congenital lesion of larynx and stridor

★ **Neck /Face**

- Benign disease of neck
- Metastatic neck disease
- The thyroid gland benign / malignant disorders
- Tumours of infratemporal fossa and parapharyngeal space
- Facial plastic surgery.
- Plastic and reconstructive surgery of head and neck

★ **Paediatrics Otolaryngology**

- Genetic factors and deafness
- Causes of deafness
- Testing hearing in children
- Screening and surveillance for hearing impairment in pre school children
- Otitis media with effusion
- Acute and chronic suppurative otitis media in children
- Surgery of congenital absence of external /middle ear
- Management of hearing impaired child.
- Cochlear implantation in children
- Vestibular disorder in children
- Speech and language development
- Foreign body in ear and nose
- Congenital anomalies in nose
- Craniofacial anomalies
- Nasal obstruction , rhinorrhoea in infants and children
- Tonsils and adenoids
- Dental development ,orthodontics, cleft lip and palate
- Sleep apnea
- Stertor and stridor
- Acute laryngeal infections
- Home care of tracheostomised children
- Branchial cleft anomalies, thyroglossal cyst and fistula.
- Tumors of head and neck in children
- The drooling child
- Recurrent respiratory papillomatosis
- Pediatrics anesthesia

3.2 Practical

➤ **History taking pertaining to Otolaryngology and examination like:**

- ★ anterior and posterior rhinoscopy
- ★ oral cavity examination
- ★ indirect laryngoscopy
- ★ otoscopy
- ★ neuro-otology testing
- ★ tuning fork testing
- ★ audiometry
- ★ impedance and vestibular function testing
- ★ examination of Eustachian tube

- ★ functional examination of nose
- ★ transillumination test
- ★ Neck examination
- ★ examination of cranial nerves
- ★ Examination of cervical lymph nodes
- ★ Nasal endoscopy
- ★ flexible fiberoptic laryngoscopy
- ★ micro-ear examination (according to the facilities available in the department).
- **Monitoring skills**
 - ★ Temperature recording
 - ★ Capillary blood sampling
 - ★ Arterial blood sampling
 - ★ Cardio-respiratory monitoring
 - ★ Post-operative patient monitoring and management accordingly,
 - ★ Tracheostomy care
 - ★ Blood gas analysis
 - ★ Airway management.
- **Therapeutic skills**
 - ★ Tracheostomy,
 - ★ Anterior/posterior nasal packing
 - ★ Ear packing, syringing,
 - ★ Foreign body removal from ear/nose/throat,
 - ★ Airway management
 - ★ Nasogastric feeding
 - ★ Endotracheal intubation
 - ★ Cardiopulmonary resuscitation
 - ★ Administration of oxygen
 - ★ Venepuncture and establishment of vascular access
 - ★ Administration of fluids, blood, blood components, parenteral nutrition
 - ★ Common dressings
 - ★ Abscess drainage
 - ★ Basic principles of rehabilitation.
- **Diagnostic skills**
 - ★ Interpretation of X-rays/CT/MRI of Head, nose and paranasal sinuses, ear, neck & chest
 - ★ Understanding of audiograms, ENG. BERA, ultrasonographic abnormalities
- **Surgical skills:**

The first year resident observes the general layout and working of the OT, understands the importance of maintaining sanctity of the OT, scrubbing, working and sterilization of all the OT instruments, know-how of endoscopes, microscopes and laryngoscopes. He/She is responsible for shifting of OT patients, for participating in the surgery as second assistant and for post op management of the patient in recovery and in ward. The second year resident is responsible for the pre-op work up of the patient, surgical planning and understanding the rationale of surgery. He/She is the first assistant in surgery and is responsible for anticipating intra-op and post-op complications and managing them. The final year resident should be able to perform minor/medium surgeries independently and assist in medium and major/extra major surgeries. He/She should be able to handle all emergencies and post

operative complications independently and is responsible for supervision and guidance of his/her juniors.

The residents are provided with the facilities for temporal bone and cadaveric dissection which are checked periodically.

4. Teaching Program

4.1. General Principles

Acquisition of practical competencies being the keystone of postgraduate medical education, postgraduate training is skills oriented.

Learning in postgraduate program is essentially self-directed and primarily emanating from clinical and academic work. The formal sessions are merely meant to supplement this core effort.

4.2. Teaching Sessions

- ❖ Bedside Teaching Round
- ❖ Seminar
- ❖ Journal Club
- ❖ Case discussion

4.3. Teaching Schedule

Suggested departmental teaching schedule is as follows:

Journal club/Seminar	Once a week
Speciality clinic (Vertigo / head neck cancer).	Once a week
Thesis meeting.	Once a week
Seminar/Case Presentation.	Once a week
Seminar/Case Presentation.	Once a week
Central session	Once a week

Note:

- 3 All sessions are to be attended by the faculty members. All PGs are supposed to attend the sessions except the ones posted in emergency.
- 4 All the teaching sessions are assessed by the consultants at the end of session and marks are given out of 10 and kept in the office for internal assessment.
- 5 Attendance of the Residents at various sessions has to be at least 75%.

7. Assessment

All the PG residents are to be assessed daily for their academic activities also periodically.

7.1. General Principles

- 6 The assessment is valid, objective and reliable.
- 7 It covers cognitive, psychomotor and affective domains.
- 8 Formative, continuing and summative (final) assessment is also conducted in theory as well as practical/clinical. In addition, thesis is also assessed separately.

7.2. Formative Assessment

The formative assessment is continuous as well as end-of-term. The former is to be based on the feedback from the senior residents and the consultants concerned. End-of-term assessment is held at the end of each semester (upto the 5th semester). Formative assessment will not count towards pass/fail at the end of the program, but will provide feedback to the candidate.

7.3. Internal Assessment

The performance of the Postgraduate student during the training period should be monitored throughout the course and duly recorded in the log books as evidence of the ability and daily work of the student. Marks should be allotted out of 100 as followed.

Sr. No.	Items	Marks
1.	Personal Attributes	20
2.	Clinical Work	20
3.	Academic activities	20
4.	End of term theory examination	20
5.	End of term practical examination	20

1. Personal attributes:

Behavior and Emotional Stability: Dependable, disciplined, dedicated, stable in emergency situations, shows positive approach.

Motivation and Initiative: Takes on responsibility, innovative, enterprising, does not shirk duties or leave any work pending.

Honesty and Integrity: Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.

❖ **Interpersonal Skills and Leadership Quality:** Has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to seniors, has good communication skills.

2. Clinical Work:

❖ **Availability:** Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.

❖ **Diligence:** Dedicated, hardworking, does not shirk duties, leaves no work pending, does not sit idle, competent in clinical case work up and management.

- ❖ **Academic ability:** Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.
 - ❖ **Clinical Performance:** Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and progress notes in the file (daily notes, round discussion, investigations and management) Skill of performing bed side procedures and handling emergencies.
3. **Academic Activity:** Performance during presentation at Journal club/ Seminar/ Case discussion/Stat meeting and other academic sessions. Proficiency in skills as mentioned in job responsibilities.
 4. **End of term theory examination** conducted at end of 1st, 2nd year and after 2 years 9 months
 5. **End of term practical/oral examinations** after 2 years 9 months.

Marks for **personal attributes** and **clinical work** should be given annually by all the consultants under whom the resident was posted during the year. Average of the three years should be put as the final marks out of 20.

Marks for **academic activity** should be given by the all consultants who have attended the session presented by the resident.

The Internal assessment should be presented to the Board of examiners for due consideration at the time of Final Examinations.

7.4. Summative Assessment

- 9 Ratio of marks in theory and practicals will be equal.
- 10 The pass percentage will be 50%.
- 11 Candidate will have to pass theory and practical examinations separately.

A. Theory

Title	Marks
Paper 1: Basic Sciences as related to Ear, Nose & Throat diseases.	100
Paper 2: Principles & Practice of Ear, Nose & Throat diseases.	100
Paper 3: Operative Surgery & Principles of General Surgery as applied to ENT.	100
Paper 4: Recent advances in ENT diseases.	100
Total	400

B. Practical

One Long Case	= 100
Two Short Cases 100 each	= 200
Oral :	
Viva (10 each with 4 examiners).	= 40
Instruments.	= 20
Specimens	= 10
Bones (Temporal bone, Skull)	= 10
Investigations(CT, MRI, Audiogram, BERA, Impedance, ENG, X-Ray (according to the facilities available in the department).	= 20
Total	400

8. Job Responsibilities

During first year the resident will work under direct supervision of the 2nd/3rd year resident/senior resident and consultant on call. He/She will be responsible for taking detailed history, examination of patients as per the file record and send appropriate investigations as advised by seniors. Initially all procedures are to be observed and then done under supervision of seniors and during 2nd/3rd year can do procedures independently. In 2nd year, resident is posted in specialty clinics and is also responsible for making of discharge cards including referrals. In 3rd year, the resident is encouraged to make independent decisions in management of cases. He/She is also involved in teaching of undergraduate students in OPDs.

The first year resident observes the general layout and working of the OT, understands the importance of maintaining sanctity of the OT, scrubbing, working and sterilization of all the OT instruments, know-how of endoscopes, microscopes and laryngoscopes. He/She is responsible for shifting of OT patients, for participating in the surgery as second assistant and for post op management of the patient in recovery and in ward. The second year resident is responsible for the pre-op work up of the patient, surgical planning and understanding the rationale of surgery. He/She is the first assistant in surgery and is responsible for anticipating intra-op and post-op complications and managing them. The final year resident should be able to perform minor/medium surgeries independently and assist in medium and major/extra major surgeries. He/She should be able to handle all emergencies and post operative complications independently and is responsible for supervision and guidance of his/her juniors.

9. Suggested Books -

9.1. Core books:

Name of Books.	Author
❖ Diseases of ear, nose and throat.	Scott Brown
❖ Head and Neck surgery.	PM Stell & AGD Maran

❖ Surgery of the Ear.	Glasscock & Shambaugh
❖ Otolaryngology - Head & Neck Surgery.	Cummings.
❖ Diseases of ear, nose and throat.	Logan Turner
❖ Diseases of ear, nose and throat.	PL Dhingra
❖ Audiological assessment.	Anirban Biswas

9.2. Reference Books:

Name of Books.	Author
❖ Otolaryngology, Otology & Neurotology.	Paprella & Micheal.
❖ Essentials of endoscopic sinus surgery.	S. Stamberger
❖ Colour Atlas of Head & Neck Surgery.	Jatin P Shah

9.3. Journals

- ❖ Archives Otolaryngology.
- ❖ Journal of Laryngology & Otology.
- ❖ Journal of Otolaryngology, clinics of North America.
- ❖ Indian Journal of Otolaryngology & Head & Neck

10. Model Test Papers

MODEL QUESTION PAPER

MS (Ear, Nose and Throat)
Paper-I

Basic Sciences as related to Ear, Nose & Throat diseases

Max. Marks:100

Time: 3 hrs

-
- **Attempt ALL questions**
 - **Answer each question & its parts in SEQUENTIAL ORDER**

- ***ALL questions carry equal marks***
 - ***Illustrate your answer with SUITABLE DIAGRAMS***
-

- I What is three tier mechanisms of larynx? Describe its clinical applications.
- II Discuss the applied surgical anatomy of middle ear spaces.
- III Draw a diagram showing osteo meatal complex. Explain its role in endoscopic sinus surgery.
- IV Describe the 2nd stage of deglutition.
- V Write briefly on anatomy of pathway of olfaction. Elaborate the theories of olfaction.
- VI Discuss the development of 2nd branchial arch. Enlist the various anomalies associated with it.
- VII Discuss the theories of bone conduction.
- VIII Enumerate the anomalies of the pinna.
- IX Discuss the anatomy of the fossa of rosenmuller and its clinical importance.
- X Discuss the anatomy of pterygo-palatine fossa.

MODEL QUESTION PAPER

MS (Ear, Nose and Throat)

Paper-II

Principles & Practice of Ear, Nose & Throat diseases

*Max. Marks:100**Time: 3 hrs*

-
- **Attempt ALL questions**
 - **Answer each question & its parts in SEQUENTIAL ORDER**
 - **ALL questions carry equal marks**
 - **Illustrate your answer with SUITABLE DIAGRAMS**
-

- I Enumerate the causes of unilateral nasal obstruction in a young male. Write briefly on etiopathogenesis of angiofibroma.
- II Discuss the etiopathogenesis of Meniere's disease.
- III Discuss the clinical features and pathology of glomus tumor.
- IV Elaborate the TNM classification of supraglottic carcinoma and write about its management.
- V What are the premalignant lesions of larynx. Discuss their management.
- VI Discuss the pathogenesis and the tests for recruitment.
- VII What is the pathology of noise induced hearing loss.
- VIII Write about the etiopathogenesis, clinical presentation and management of necrotizing otitis media
- IX Write briefly on role of impedance audiometry in middle ear pathologies.
- X What is optokinetic nystagmus. Discuss its clinical significance and testing procedures.

MODEL QUESTION PAPER

MS (Ear, Nose and Throat)
Paper-III

Operative Surgery of Principles of General surgery as applied to ENT

Max. Marks:100

Time: 3 hrs

- **Attempt ALL questions**
 - **Answer each question & its parts in SEQUENTIAL ORDER**
 - **ALL questions carry equal marks**
 - **Illustrate your answer with SUITABLE DIAGRAMS**
-

- I Describe the indications and surgical technique of near total laryngectomy.
- II Enumerate the types of neck dissections and write briefly on their indications.
- III What is immunotherapy and its role in Head and Neck Cancers.
- IV Discuss the extra nasal indications of endoscopic sinus surgery.
- V Enumerate the extra temporal complications of otitis media and write about the management of sigmoid sinus thrombosis.
- VI Write briefly on types of osteotomies in Rhinoplasty.
- VII Discuss the surgical management of pleomorphic adenoma of parotid.
- VIII Discuss the types of thyroiditis and the management of Hashimoto's thyroiditis.
- IX Describe the surgical treatments for postcricoid carcinoma.
- X Discuss the role of microvascular flaps in malignancies of oral cavity.

MODEL QUESTION PAPER

MS (Ear, Nose and Throat)
Paper-IV

Recent advances in ENT diseases

Max. Marks:100

Time: 3 hrs

- **Attempt ALL questions**
 - **Answer each question & its parts in SEQUENTIAL ORDER**
 - **ALL questions carry equal marks**
 - **Illustrate your answer with SUITABLE DIAGRAMS**
-

- I Enumerate the types of lasers and write briefly on its role in laryngeal pathologies.
- II What is photodynamic theory. Describe its role in nasopharyngeal carcinoma.
- III Describe the selection criteria for cochlear implant and write briefly on advantages of multi channel implants.
- IV What is bone anchored Hearing Aid ? Discuss the indications and surgical procedure.
- V What is spastic dysphonia. Describe its management.What is otoendoscopy. Describe its clinical applications.
- VI What is otoendoscopy. Describe its clinical applications.
- VII Describe the advantages of image guided sinus surgery.
- VIII Discuss the role of intra-op nerve monitoring in ear surgery.
- IX Write briefly on indications and types of laryngeal prosthesis for post laryngectomy patients.
- X What are otoacoustic emissions ? Write about its clinical application.