## Sri Guru Ram Das University of Health Sciences, Amritsar
## Diploma in Operation Theatre Technology (DOTT.1.4.) session 2024

| Course code | Course Title | Course Type | L+T+P | Total Credits/Week | Weightage Theory/ Practical IA+UE |
|---|---|---|---|---|---|
| **Semester-I** | | | | | |
| DOTT-ANT.201 | Anatomy-I | Foundation | 3+0+2 | 5 | 25+25=50T<br>50P |
| DOTT-PHY.201 | Physiology-I | Foundation | 3+0+2 | 5 | 25+25=50T<br>50P |
| DOTT-PAT.201 | Pathology | Foundation | 3+0+0 | 3 | 50+50=100T |
| DOTT.201 | Surgical Anatomy | Core | 3+0+2 | 5 | 50+50=100T<br>50P |
| ECO.250 | English/ Communication skills | Elective | 2+0+0 | 2 | NC |
| | | **Total Credits** | **14+0+6** | **20** | **450** |
| **Semester-II** | | | | | |
| DOTT-ANT.202 | Anatomy-II | Foundation | 3+0+0 | 3 | 25+25=50T |
| DOTT-PHY.202 | Physiology-II | Foundation | 3+0+0 | 3 | 25+25=50T |
| DOTT.202 | Surgical Physiology | Core | 3+0+3 | 6 | 50+50=100T<br>50+50=100P |
| DOTT.203 | Surgical Pathology | Core | 3+0+3 | 6 | 50+50=100T<br>50+50=100P |
| COM.250 | Computer applications | Elective | 2+0+0 | 2 | NC |
| | | **Total Credits** | **14+0+6** | **20** | **500** |
| | | | | | |
| **Semester-III** | | | | | |
| DOTT-MIC.301 | Microbiology | Foundation | 3+0+2 | 5 | 50+50=100T<br>50P |
| DOTT-PHA.301 | Pharmacology | Foundation | 3+0+2 | 5 | 50+50=100T<br>50P |
| DOTT.301 | Basic Surgical Techniques and Surgical Ethics | Core | 3+1+4 | 8 | 50+50=100T<br>100P |
| HVE.350 | Human Values & Ethics | Elective | 3+0+0 | 3 | NC |
| | | **Total Credits** | **12+1+8** | **21** | **500** |
| **Semester-IV (new)** | | | | | |
| DOTT.302 | Advanced Anesthesia Techniques | Core | 3+0+2 | 5 | 30+70=100 T<br>10+40=50 P |
| DOTT.303 | Advanced Surgical Procedures | Core | 3+0+2 | 5 | 30+70=100 T<br>10+40=50 P |
| DOTT.304 | Basic Intensive CARE | Core | 2+0+2 | 4 | 30+70=100 T<br>10+40=50 P |
| DOTT.305 | Clinical Medicine & Management | Core | 2+0+0 | 2 | 10+40=50 T |
| | | **Total Credits** | **10+0+6** | **16** | **500** |
| | | **Grand Total** | **50+1+26** | **77** | **1950** |

## Fourth Semester

### DOTT.302: Advanced Anesthesia Techniques (100 Hours)

### Learning Objectives

The learning objectives cover various aspects of Anaesthesia, including ear, nose, and throat surgeries, airway management, ophthalmic surgeries, local and regional anaesthesia techniques, head and neck procedures, and complications specific to ENT and ophthalmic surgeries. Anaesthetic considerations for ear, nose, and throat surgeries include identifying challenges, understanding techniques for maintaining airway patency, evaluating risks and benefits, and developing strategies for pain and discomfort management. Advanced airway management techniques, such as fibreoptic intubation, supraglottic airway devices, and video laryngoscopy, are essential for securing and maintaining the airway during ENT procedures.

Ophthalmic surgeries involve unique considerations and challenges, with different techniques used for patient positioning, sedation, and monitoring. The advantages and disadvantages of different methods for specific ophthalmic procedures are also discussed. Local and regional anaesthesia techniques for head and neck procedures are also discussed, with the benefits, limitations, and potential complications of these techniques.

Complication management for ENT and ophthalmic surgeries involves recognizing potential complications, developing strategies for preventing and managing them, understanding the appropriate use of medications and interventions, and evaluating and implementing measures for optimizing patient safety and outcomes.

### Course Outcome

The course on Anaesthetic Considerations in ENT and Ophthalmic Surgeries aims to equip students with the skills to:

a) Anesthetic considerations for ear, nose, and throat surgeries: Demonstrate understanding of challenges and techniques involved in providing Anaesthesia for ENT procedures, apply appropriate methods and strategies for maintaining airway patency, and implement pain management protocols.
b) Airway management in ENT procedures: Use advanced techniques like fibreoptic intubation, supraglottic airway devices, and video laryngoscopy to maintain airway patency and manage complications.
c) Anesthetic techniques for ophthalmic surgeries: Understand the unique challenges and challenges in providing Anaesthesia, apply appropriate techniques for different procedures, and implement patient positioning, sedation, and monitoring protocols.
d) Local and regional anesthesia techniques for head and neck procedures: Demonstrate proficiency in administering local anaesthetics and performing nerve blocks, and select and apply regional techniques based on surgical requirements.
e) Management of complications specific to ENT and ophthalmic surgeries: Identify potential complications and adverse events, implement preventive measures, and address complications promptly and appropriately to ensure patient safety and optimize outcomes.

**Advanced Anaesthesia Techniques (ENT and Ophthalmic Surgeries):**

- Anaesthetic considerations for ear, nose, and throat surgeries: Understanding the specific challenges and techniques involved in providing Anaesthesia for ENT procedures such as tonsillectomy, adenoidectomy, and sinus surgery. - 20 Hours
- Airway management in ENT procedures: Learning about advanced airway management techniques, such as fibreoptic intubation, supraglottic airway devices, and video laryngoscopy, for securing the airway during ENT surgeries. - 20 Hours
- anaesthetic techniques for ophthalmic surgeries: Studying the unique considerations for providing Anaesthesia during eye surgeries, including cataract extraction, retinal surgeries, and glaucoma procedures. - 20 Hours
- Local and regional Anaesthesia techniques for head and neck procedures: Exploring the principles and administration techniques for local anaesthetics, nerve blocks, and regional Anaesthesia for head and neck surgeries. - 20 Hours
- Management of complications specific to ENT and ophthalmic surgeries: Understanding the potential complications and adverse events related to Anaesthesia in ENT and ophthalmic surgeries and learning strategies for their prevention and management. - 20 Hours

**Practical Sessions: (50 Hours)**

- Considerations for Anesthesia in ENT Surgery:
- Tonsillectomy and Adenoidectomy: Patient Positioning and Airway Access: During tonsillectomy and adenoidectomy operations, students will practice optimal patient positioning and techniques for preserving a patent airway.
- Anesthetic Agent Selection and Administration: Students will learn about the proper selection of anaesthetic agents for ENT operations, including inhalational and intravenous agents. They will put their administration and monitoring skills to the test.
- Anesthetic Techniques for Sinus Surgery: Students will learn about the anaesthetic considerations unique to sinus surgery, such as keeping a clear operative field, limiting bleeding, and managing patient placement. They will put these strategies to the test in simulated circumstances.

**Airway Control in ENT Procedures:**

- Fibreoptic Intubation Techniques: Students will practice fiberoptic intubation with airway manikins. They will learn how to use the fiberscope correctly to secure the airway in difficult ENT cases.
- Supraglottic Airway Devices: Insertion and Positioning of Supraglottic Airway Devices: In simulated ENT settings, students will practice the insertion and correct positioning of supraglottic airway devices such as laryngeal mask airways (LMAs).

- Ophthalmic Surgery Anaesthesia Techniques:
- Topical Anaesthesia Techniques for Cataract Extraction: Students will learn and practice different topical anesthetic approaches for cataract extraction, such as eye drops, subconjunctival injections, and intracameral anaesthesia.

**Retinal Surgery and Glaucoma Treatments:**

- Blocks for the peribulbar and retrobulbar areas: Students will study and practice peribulbar and retrobulbar blocks, which are often used to provide anaesthesia during retinal and glaucoma treatments. On manikins, they will practice proper needle insertion and pharmaceutical deposition techniques.

**Complication Management in ENT and Ophthalmic Surgery:**

- Difficult Airway Scenarios and Airway Obstruction:
- Airway blockage Simulation: Students will take part in simulated scenarios involving airway blockage and difficult airway circumstances in ENT surgery. They will practice effective management strategies such as emergency airway maneuvers and the placement of an alternate airway device.

**Complications of Ophthalmic Surgery:**

- Ocular Emergencies Simulation: During ophthalmic procedures, students will encounter simulated ocular emergencies such as rapid loss of vision or high intraocular pressure.
- They will learn and practice the necessary emergency management strategies.

Students will be able to apply their theoretical knowledge in a simulated clinical setting during these practical sessions, allowing them to develop skills and confidence in managing anaesthetic considerations, airway management, and complications specific to ENT and ophthalmic surgeries.

## DOTT.303: Advanced Surgical Procedures (100 Hours)

### Learning Objectives

The learning objectives for this course include understanding surgical procedures in ear, nose, and throat (ENT), diseases in otolaryngology (ENT), eye diseases, laser precautions, surgical techniques in ophthalmology, endoscopic procedures in ENT and ophthalmology, laser-assisted surgical procedures in ENT and ophthalmology, minimally invasive approaches in ENT and ophthalmology, and management of complications in ENT and ophthalmology.

The course covers various surgical procedures, diseases, and complications in ENT, ophthalmology, laser-assisted surgical procedures, minimally invasive approaches, and management of complications. Students will gain knowledge about the etiology, pathophysiology, clinical presentation, and diagnostic approaches for each ENT disease, as well as the medical and surgical treatment options available for managing ENT diseases.

The course also covers laser safety training, proper laser warning signage, and interlock systems. Students will also learn about the instruments and techniques involved in ophthalmic surgeries, as well as the preoperative, intraoperative, and postoperative considerations for these procedures.

The course also covers endoscopic procedures, laser-assisted surgical procedures, and minimally invasive approaches in ENT and ophthalmology. Students will explore the advantages, limitations, and patient selection criteria for these approaches and evaluate the outcomes and potential complications.

In conclusion, this course provides a comprehensive understanding of surgical procedures, diseases, and complications in ENT and ophthalmology. By understanding these areas, students will be better equipped to manage and optimize patient outcomes during these procedures.

The course teaches students to demonstrate knowledge of surgical procedures in ear, nose, throat, and ophthalmology, apply specialized instruments and techniques, understand positioning requirements, and diagnose common ENT diseases. It also covers medical and surgical treatment options, ophthalmic diseases, laser safety protocols, and ophthalmic surgical principles. Students will perform endoscopic procedures, safely and effectively utilize lasers, evaluate minimally invasive approaches, apply preventive measures, and optimize patient outcomes and safety in ENT and ophthalmic surgical interventions.

**Advanced Surgical Procedures**

- Surgical procedures in ear, nose, and throat (ENT): Learning about the various surgical procedures performed in ENT, including tonsillectomy, septoplasty, laryngectomy, and sinus surgery, and understanding the specialized instruments and techniques used, and positioning for each surgery. - 15 Hours
- Diseases in Otolaryngology (ENT) : Chronic Sinusitis, Tonsillitis, Deviated Septum Otitis Media, Vocal Cord Nodules or Polyps, Obstructive Sleep Apnea (OSA),Laryngeal Cancer ,Nasal Polyps, Salivary Gland Disorders, Cochlear Implantation. - 15 Hours
- Diseases in Ophthalmology: - 20 Hours
    - Cataracts - Cataract Extraction and Intraocular Lens (IOL) Implantation,
    - Glaucoma - Trabeculectomy, Shunt Implantation, Laser Therapy
    - Age-related Macular Degeneration (AMD) - Intravitreal Injections, Laser Therapy, Photodynamic Therapy
    - Diabetic Retinopathy - Vitrectomy, Laser Therapy
    - Retinal Detachment - Retinal Detachment Repair
    - Dry Eye Syndrome - Punctal Occlusion Surgery
    - Conjunctivitis - Symptomatic Treatment (Medications, Eye Drops)
    - Corneal Diseases - Corneal Transplantation (Keratoplasty)
    - Refractive Errors - LASIK (Laser-Assisted in Situ Keratomileusis), PRK (Photorefractive Keratectomy)
    - Retinoblastoma - Chemotherapy, Radiation Therapy, Enucleation (Eye Removal)

- Laser Precautions: Laser Safety Training, Protective Eyewear, Fire Safety Laser Plume Management, Patient Safety, Laser Device Maintenance, Laser Warning Signage, Laser Interlock Systems, Laser Hazard Assessment Compliance with Regulatory Standards. - 6 Hours
- Surgical techniques in ophthalmic surgery: Exploring the specific surgical procedures performed in ophthalmology, such as cataract extraction, corneal transplantation, vitrectomy, and refractive surgeries, and understanding the instrumentation and surgical principles involved. - 10 Hours
- Endoscopic procedures in ENT and ophthalmic surgery: Understanding the principles and techniques of endoscopic surgeries in ENT and ophthalmology, including endoscopic sinus surgery, laryngoscopy, tracheostomy, and arthroscopy. - 4 Hours
- Laser-assisted surgical procedures in ENT and ophthalmology: Learning about the use of lasers in surgical procedures in ENT and ophthalmology, including laser-assisted tonsillectomy, laser-assisted stapedotomy, and laser refractive surgeries. - 10 Hours
- Minimally invasive approaches in ENT and ophthalmic surgery: Exploring minimally invasive surgical techniques, such as laparoscopic and robotic-assisted procedures, in ENT and ophthalmology, and understanding their advantages and limitations. - 10Hours
- Management of complications in ENT and ophthalmic surgeries: Understanding the potential complications and adverse events that may arise during ENT and ophthalmic surgeries, and learning strategies for prevention, recognition, and management -10 Hours

**Practicals: (50 Hours)**

- Surgical procedures in ear, nose, and throat (ENT) include tonsillectomy, septoplasty, sinus surgery, endoscopic sinus surgery, chronic sinusitis, tonsillitis, ophthalmic surgery, cataract extraction, corneal transplantation, and laryngoscopic examination. Students will know the identification of all surgical instruments of the above specialties.
- Students will practice arrangement techniques for cold knife dissection, electrocautery, and coblation, as well as the proper use of specialized instruments like tonsil snares, dissectors, and hemostatic agents. They will also learn the principles of maintaining nasal airway patency and proper positioning of nasal packing.
- Endoscopic sinus surgery involves hands-on experience with endoscopic instruments, including sinus scopes and instrumentation.
- Endoscopic procedures in ENT and ophthalmic surgery include simulated endoscopic sinus surgery scenarios using anatomical models, focusing on sinus visualization, polyp removal, and ostium widening. Students will also practice arranging instruments required for laryngoscopic examination using laryngoscope models, learning proper insertion, and positioning of laryngoscope blades, visualization of vocal cords, and identification of laryngeal structures. These practical sessions provide students with hands-on experience and simulation-based training to develop skills and competence in advanced arrangement for surgical procedures, disease assessment, surgical techniques, and management of complications in ENT and ophthalmic surgeries.

## DOTT.304: Basic Intensive Care

### Learning Outcomes

a) Recognize proper care and maintenance practices for ventilators, suction machines, and monitoring equipment.
b) Check, clean, and troubleshoot this equipment on a regular basis.
c) Recognize prevalent flaws and take corrective action.
d) Understand the concepts of ventilator sterilization and disinfection.
e) Recognize the proper sterilization processes and disinfectants for ventilators.
f) Know how to care for, maintain, and operate beds, lights, and other pieces of equipment.
g) Recognize the significance of air conditioning and pollution control in the ICU setting.
h) Recognize HVAC systems and air filtration procedures in order to maintain air quality.
i) Be familiar with the attachment and intraoperative use of ventilators and monitoring devices.
j) Adult and pediatric patients who are unconscious are cared for.
k) Recognize unique care requirements, such as posture, hygiene, and monitoring.
l) Recognize and manage any potential difficulties or crises that may arise while caring for unconscious patients.
m) Become familiar with physiotherapy procedures, feeding, Ryle's tube insertion, and hyperalimentation.
n) recognize suctioning and posture techniques in semiconscious and unconscious patients.
o) Understand the concepts and procedures of oxygen therapy, including identifying and selecting appropriate delivery systems and masks based on patient needs.
p) Assess ventilation during a patient emergency.
q) Assist with ventilation using mouth-to-mouth, mouth-to-ET tube, or bag-valve mask construction procedures.
r) Depending on the patient's condition and response, implement suitable ventilation methods.

### Course Outcomes:

Students will leave with knowledge and abilities in ventilator care, maintenance, and troubleshooting, as well as basic sterilization and disinfection practices. It explains how to care for, maintain, and operate beds, lights, and other regularly used ICU equipment. Students will also learn to control air conditioning and pollution in the ICU environment, attach and configure ventilators and monitoring devices intraoperatively, provide appropriate care for unconscious adult and paediatric patients, perform physiotherapy techniques, suctioning, administer oxygen therapy, provide ventilation support, understand the principles of ventilator and monitoring equipment, measure blood pressure, temperature, and expired gases, and understand laryngeal anatomy.

**Basic Intensive Care**

- Care and maintenance of ventilators, suction machine, monitoring devices. - 2 Hours
- Sterilization and disinfection of ventilators. - 1 Hour
- Care, maintenance and operational capabilities of beds, lights and other apparatus. -1 Hour
- Air conditioning and control of pollution in ICU. - 1 Hour
- Attachment and intraoperative utility of ventilators and monitoring devices. - 1 Hour
- Care of unconscious adult and paediatric patients. - 3 Hour
- Physiotherapy techniques, feeding, Ryle‟s tube insertion and hyper alimentation. -3 Hours
- Suctioning and posturing of semiconscious and unconscious patients. - 2 Hours
- Oxygen therapy, maintenance of clear Airway, Various types of masks. - 6 Hours
- Ventilation of patient in crisis: - 2 Hours
- Resuscitator/ bag valve mask assembly - 2 Hours
- Different types of Airways. - 2 Hours
- Short term ventilation/ Transport ventilators. - 1 Hour
- ABG techniques & analysis. - 3 Hours
- Management of asepsis. - 4 Hours
- Psychological aspects of the patient, relative and staff. - 2 Hours
- Hemofiltration and hemodialysis. - 4 Hours
- Jet Ventilation. - 2 Hours
- Ventilators: Principles of working of different ventilators: - 8 Hours
- Volume cycled/Time cycled/Pressure cycled ventilators.
- High frequency ventilators and other types.
    - Methods of measuring the expired gases from the patient; Types of spirometers, Principles of working of spirometers. Clinical application of above apparatus.
    - Apparatus and techniques of measuring of blood pressure and temperature; Principle and working of direct/indirect blood pressure monitoring apparatus; structure, principle and working of the Oscillo tonometer. Principles and working of aneroid manometer type B.P. instrument.
    - Laryngeal sprays; Types, material, principle, and mechanism.
    - Monitoring techniques and equipment; Cardiac monitors, Respiratory monitors, Spirometers, Temperature monitors.

**Practical/ Clinical Postings: ( 100 Hours)**

- Ventilator Care and Maintenance:
    - Hands-on practice in the proper care and maintenance of ventilators, including cleaning, sterilization, and disinfection techniques.
    - Understanding the functions and operation of different modes and settings of ventilators.
    - Troubleshooting common ventilator issues and alarm management.

- Bed and Apparatus Care:
  - Practical demonstration of bed maintenance, including adjustment of height, positioning, and proper use of bed controls.
  - Familiarization with the operational capabilities of ICU lights and other apparatus, such as infusion pumps and monitors.
  - Cleaning and disinfection procedures for bed surfaces and equipment.
- Air Conditioning and Pollution Control in ICU:
  - Practical session on the management of air conditioning systems in the ICU to maintain optimal temperature, humidity, and air quality.
  - Understanding the importance of infection control measures and strategies to minimize airborne contaminants in the ICU environment.
- Care of Unconscious Patients:
  - Simulation-based training on the care and management of unconscious adult and pediatric patients, including monitoring vital signs, maintaining airway patency, and providing basic hygiene.
  - Practice in the proper positioning and turning techniques for unconscious patients to prevent pressure ulcers.
- Oxygen Therapy and Airway Management:
  - Hands-on practice in administering oxygen therapy using different types of masks and nasal cannulas.
  - Simulation of airway management techniques, including insertion and securing of endotracheal tubes, use of different types of airways, and bag-valve mask ventilation.
- Physiotherapy Techniques and Feeding Methods:
  - Practical demonstration and practice of physiotherapy techniques, such as chest physiotherapy and postural drainage, to promote airway clearance.
  - Training on safe and proper insertion of Ryle's tube for enteral feeding, followed by simulated feeding procedures and maintenance.
- Hemofiltration and Hemodialysis:
  - Introduction to the principles and techniques of hemofiltration and hemodialysis for renal replacement therapy.
  - Simulation-based training on the setup and operation of hemofiltration and hemodialysis machines, including the monitoring of patients during the procedure.
- Psychological Aspects of Patients, Relatives, and Staff:
  - Interactive sessions focusing on the psychological aspects of patients, their relatives, and healthcare staff in the ICU setting.
  - Role-playing exercises to develop effective communication skills and strategies for providing emotional support to patients and their families.

## DOTT.305: Clinical Medicine & Related Management (60 Hours)

### Learning Objectives

Practical topics for students in the field of respiratory and cardiovascular system include hands-on training in examinations and investigations, such as ECG interpretation and pulmonary function tests, as well as simulations for managing emergencies like cardiac arrest. They should also learn about specific conditions like ischemic heart disease, asthma, and pneumonia through case discussions and observation of relevant procedures. Additionally, practical sessions on airway management, chest tube insertion, and the use of diagnostic tools in diagnosing and managing lung diseases like tuberculosis and lung cancer are essential

**Clinical Medicine & Related Management**

- Respiratory & cardiovascular system- - 4 Hours
- Examination and Investigations relevant to cardiovascular system - 4 Hours
- Ischemic heart disease - 2 Hours
- Valvular heart diseases - 4 Hours
- Common arrhythmias encountered in clinical practice - 2 Hours.
- Hypertension - 2 Hours
- Heart failure - 2 Hours
- Cardiomyopathies - 2 Hours
- Examination and Investigations relevant to respiratory system - 2 Hours
- Asthma and COPD - 4 Hours
- Pneumonia - 2 Hours
- Pulmonary tuberculosis - 4 Hours
- Bronchiectasis - 2 Hours
- Lung abscess - 4 Hours
- Pneumothorax - 2 Hours
- Pleural effusion - 4 Hours
- Respiratory failure-types, causes and management - 6 Hours.
- Carcinoma lung - 6 Hours