

## **DMIHER (DMMC/SMHRC) NICHE ELECTIVES**

### **1. IMAGING THE MAGIC BOX: ABDOMEN**

"Imaging the Magic Box: Abdomen" is an in-depth course that explores the complex anatomy and pathology of the abdominal region using advanced imaging techniques. The abdomen houses vital organs, including the liver, kidneys, intestines, and spleen, and this course will teach you how to visualize and interpret these structures using modalities such as Xray, ultrasound, CT, and MRI. This course will enhance your ability to navigate abdominal imaging and improve diagnostic accuracy for a variety of abdominal conditions.

#### **Learning Objectives:**

By the end of this course, participants will be able to:

- Understand the basic anatomy of the abdomen, including key organs and their functions.
- Explore the principles of different abdominal imaging techniques (X-ray, ultrasound, CT, MRI).
- Learn to identify normal and abnormal findings in abdominal images.
- Gain insight into common abdominal conditions and their imaging features.

#### **Learning Outcomes:**

Upon completion of the course, learners will be able to:

- Accurately identify the anatomical structures of the abdomen in imaging studies.
- Interpret abdominal ultrasound, CT, and MRI images to detect normal and pathological conditions.
- Diagnose common abdominal conditions using imaging findings and correlate them with clinical symptoms.
- Apply imaging knowledge to develop diagnostic and treatment plans for abdominal disorders.

### **2. SEE THE UNSEEN: THORAX**

"See the Unseen: Thorax" is an engaging course designed to explore the anatomy, physio and pathology of the thoracic region using advanced imaging techniques. Through this course, participants will gain a deep understanding of the thorax's structures, including the lungs, heart, and surrounding tissues, and learn how imaging technologies like X-ray, CT, and MRI are used to diagnose, assess, and treat thoracic diseases. This course will enhance your ability to interpret thoracic images and make informed clinical decisions.

#### **Learning Objectives:**

By the end of this course, participants will be able to:

- Identify and describe the key anatomical structures within the thoracic region.
- Understand the different imaging modalities used for thoracic imaging (X-ray, CT and MRI).
- Analyze thoracic images to identify normal and abnormal findings.
- Explore common thoracic diseases and conditions and develop skills to interpret thoracic images in a clinical context for diagnosis and treatment planning.

#### **Learning Outcomes:**

Upon completion of the course, learners will be able to:

- Accurately describe thoracic anatomy and its relevance to clinical imaging.
- Effectively analyze and interpret thoracic X-rays, CT scans, and MRIs.
- Identify key pathologies in thoracic images and understand their clinical implications.
- Apply imaging knowledge to enhance diagnostic accuracy and patient care in clinical practice.

### **3. NEUROIMAGING INSIGHTS: BRAIN**

"Neuroimaging Insights: Brain" is an introductory course designed to provide students with a comprehensive understanding of the brain's anatomical structure through neuroimaging techniques like Computed Tomography and MRI. Students will gain hands-on knowledge of multiplanar brain imaging, understanding of the structural abnormalities of brain and Introduction to the different common pathologies.

#### **Learning Objectives:**

By the end of this course, participants will be able to:

- Understand the basic principles and techniques used in neuroimaging (e.g., MRI & CT).
- Identify the key regions of the brain and appearances on CT and various sequences of MRI.
- Analyze brain images to identify normal and abnormal findings.
- Interpreting the images for diagnosing and understanding common pathologies.

#### **Learning Outcomes:**

Upon completion of the course, learners will be able to:

- Demonstrate a clear understanding of different neuroimaging modalities and their uses.
- Apply proper neuroimaging techniques to explore common pathologies in the brain.
- Effectively analyze and interpret brain CT scans, and MRIs.
- Interpret the significance of neuroimaging findings in the context of common brain disorders.

### **4.GENERAL NEPHROLOGY**

This elective introduces final-year MBBS students to the fundamentals of nephrology, focusing on diagnosing, managing, and preventing kidney disorders. Students will engage in hands-on learning experiences to enhance their clinical acumen and holistic care approach in nephrology.

#### **Learning Objectives:**

- Perform detailed history-taking and physical examination for nephrology patients.
- Recognize and evaluate common kidney disorders, including acute kidney injury (AKI), chronic kidney disease (CKD), and nephrotic syndrome.
- Interpret renal function tests, urine analysis, ABG and imaging techniques specific to nephrology.
- Observe and understand dialysis modalities and their clinical applications.
- Counsel patients on dietary modifications, fluid management, and lifestyle adjustments for kidney health.
- Work as a member of a multidisciplinary team managing nephrology patients.

#### **Learning Outcomes:**

At the end of the elective, students will:

- Demonstrate competency in diagnosing and managing common renal conditions.
- Understand the interpretation of renal investigations and their clinical relevance.
- Gain familiarity with dialysis procedures and indications for renal replacement therapy.
- Counsel patients effectively on preventive and management strategies for kidney health.
- Develop teamwork skills in managing complex nephrology cases.
- This elective prepares students to tackle nephrological challenges in internal medicine practice with a patient-centered approach.

### **5.NON-INTERVENTIONAL CARDIOLOGY**

#### **Introduction:**

This elective equips final-year MBBS students with a thorough understanding of cardiovascular medicine, emphasizing non-invasive diagnostic and management approaches. Students will gain practical experience in managing cardiac conditions without interventional procedures.

**Objectives:**

- Learn cardiac anatomy and the pathophysiology of common heart diseases.
- Master the fundamentals of electrocardiography (ECG) interpretation for arrhythmias, myocardial infarction, and other conditions.
- Recognize clinical features of ischemic heart disease, heart failure, and valvular disorders.
- Observe and understand the role of echocardiography, Treadmill Test and Holter monitoring in non-interventional cardiac care.
- Develop skills in counselling patients about lifestyle modifications, medications, and cardiac rehabilitation.
- Collaborate with healthcare professionals in a multidisciplinary setting for managing cardiovascular disorders.

**Learning Outcomes:**

At the end of the elective, students will:

- Exhibit proficiency in diagnosing cardiac conditions through clinical evaluation and non-invasive investigations.
- Interpret ECG findings and echocardiographic reports for cardiac disease management.
- Develop skills in managing stable angina, heart failure, and arrhythmias with evidence-based medical therapy.
- Counsel patients on the importance of medication adherence and lifestyle interventions.
- Work collaboratively in multidisciplinary teams to provide comprehensive cardiac care.
- This elective provides students with a solid foundation in non-interventional cardiology, preparing them for future roles in internal medicine and cardiovascular care.

**6.GASTROINTESTINAL ENDOSCOPY**

Upper Gastrointestinal Endoscopy, a crucial diagnostic and therapeutic procedure within Surgical gastroenterology, involves the visualization and assessment of the upper gastrointestinal tract using endoscopic techniques. Through a comprehensive curriculum comprising lectures, discussions, and practical exercises, students delve into the intricacies of upper gastrointestinal endoscopy, including indications, techniques, interpretation of findings, and therapeutic interventions.

**OBJECTIVES:**

Upon completion of the elective, students will:

- Develop a foundational understanding of upper gastrointestinal anatomy and pathology.
- Acquire proficiency in performing upper gastrointestinal endoscopy procedures.
- Gain insight into the interpretation of endoscopic findings and their clinical significance.
- Familiarize themselves with therapeutic interventions performed during upper gastrointestinal endoscopy.

**LEARNING OUTCOMES:**

Upon successful completion of the course, students will demonstrate:

- Proficiency in identifying anatomical landmarks and pathological lesions during upper gastrointestinal endoscopy.
- Understanding of the indications, contraindications, and complications

associated with uppergastrointestinal endoscopic procedures.

- Competence in interpreting endoscopic findings and formulating appropriate clinical management plans.
- Knowledge of therapeutic interventions performed during upper gastrointestinal endoscopy, including hemostasis, dilatation, and stent placement.

## **7. MINIMAL INVASIVE SURGERY**

Minimal invasive surgery, a crucial therapeutic and diagnostic procedure within General surgery, surgical gastroenterology and in many other surgical field nowadays. This involves Gastrointestinal surgeries with the help of slender instruments and camera systems through keyhole incisions instead of classical open techniques. Through a comprehensive curriculum comprising lectures, discussions, and practical exercises, students delve into the intricacies of minimal invasive surgeries, including advantages of minimal invasive surgery, indications, techniques and therapeutic interventions.

### OBJECTIVES:

Upon completion of the elective, students will:

- Develop a foundational understanding of gastrointestinal anatomy and pathology.
- Gain insight into the advantages and disadvantages of minimal invasive surgery over opensurgery
- Gain insight into the various techniques of minimal invasive surgery.
- Familiarize themselves with various instruments involves in minimal invasive surgery and its working principles.

### LEARNING OUTCOMES:

Upon successful completion of the course, students will demonstrate:

- Proficiency in identifying anatomical landmarks and pathological diseases during minimal invasive surgery.
- Understanding of the indications, contraindications, and complications associated with minimal invasive surgery.
- Competence in identification and working principles of various instruments used in minimal invasive surgery.
- Knowledge of surgical steps of various common laparoscopic procedure.

## **8. NEONATAL FEEDING AND HUMAN MILK BANK**

The primary objective of this elective posting is to provide medical students with comprehensive knowledge and hands-on experience related to neonatal feeding methods, with an emphasis on human milk banks and their role in neonatal care. The students will:

- **Gain a thorough understanding** of the physiological needs of neonates in the context of nutrition, including the benefits of exclusive breastfeeding, formula feeding, and alternative feeding methods for neonates with special medical needs (e.g., preterm, low birth weight, or sick infants).
- **Understand the importance of human milk** as the optimal source of nutrition for newborns, particularly the impact of breast milk on infant health, growth, and immune protection.

- **Learn the processes and protocols of Human Milk Banks**, including donor milk screening, pasteurization, storage, and distribution. Students will also understand ethical considerations and regulatory guidelines related to milk donation and use in neonatal care.
- **Observe the management of neonatal feeding issues**, such as feeding intolerance, failure to thrive, and neonatal jaundice, and how these issues are addressed using both maternal milk and donor milk from the Human Milk Bank.
- **Understand the clinical decision-making process** behind the use of donor milk in cases where maternal milk is unavailable or insufficient, and the importance of interdisciplinary collaboration in providing optimal care for neonates.
- **Develop communication skills** for counseling parents on neonatal feeding options, including the use of human milk banks when necessary, and discuss the benefits and challenges of breastfeeding and donor milk.

By the end of the posting, students will have gained a well-rounded understanding of neonatal nutrition, the critical role of human milk in neonatal health, and the operational aspects of human milk banks, equipping them with the knowledge to contribute to evidence-based care in neonatal settings.

## **9. PELVIC FLOOR AND VAGINAL SURGERY**

### **LEARNING OBJECTIVES:**

By the end of the module, students will:

- Understand the anatomy and physiology of the pelvic floor and its relevance to clinical practice.
- Recognize common pelvic floor disorders, including prolapse, incontinence, and pelvic pain syndromes.
- Comprehend the principles of vaginal surgery and minimally invasive techniques.
- Identify indications, contraindications, and complications associated with pelvic floor surgeries.
- Develop basic surgical skills relevant to pelvic floor repair and vaginal surgery, including suturing and tissue handling.
- Appreciate the multidisciplinary approach to managing pelvic floor disorders, including the role of physiotherapy and lifestyle modifications.
- Understand the ethical, psychological, and cultural aspects of managing pelvic floor conditions.
- Learn the basics of patient counselling, preoperative preparation, and postoperative care specific to pelvic floor surgeries.

### **LEARNING OUTCOMES:**

At the end of the module, students will be able to:

- Explain the detailed anatomy of the pelvic floor, its functions, and its clinical significance.
- Identify and diagnose common pelvic floor disorders through history-taking and physical examination.
- Describe the surgical and non-surgical management options for pelvic floor disorders.
- Outline the steps of common pelvic floor surgeries, such as vaginal hysterectomy and pelvic floor repair.
- Demonstrate basic proficiency in suturing techniques and surgical instrumentation used in vaginal surgeries.
- Communicate effectively with patients about their conditions, treatment options, and expected outcomes.
- Evaluate the risks and benefits of pelvic floor surgeries and manage postoperative care plans.

- Collaborate with a multidisciplinary team for holistic management of pelvic floor disorders.
- This elective provides a foundation in pelvic floor and vaginal surgery for students, enabling them to integrate theoretical knowledge with basic practical skills.

## **10. ULTRASONOGRAPHY IN OBSTETRICS & GYNECOLOGY**

### **LEARNING OBJECTIVES:**

By the end of this elective, students will be able to:

1. Understand the fundamentals of fetal development and physiology.
2. Perform basic fetal health assessments using diagnostic tools like ultrasound.
3. Recognize common fetal anomalies and disorders.
4. Interpret prenatal screening results and understand their clinical significance.
5. Apply knowledge in managing high-risk pregnancies with a focus on fetal well-being.
6. Understand the importance of counselling families on fetal health and diagnostic findings.

**LEARNING OUTCOMES:** This 15-day module provides a thorough grounding in fetal medicine, combining theoretical learning with clinical exposure, allowing students to explore the latest practices in fetal health assessment, management of high-risk pregnancies, and ethical challenges in fetal care. The focus on rural healthcare settings helps students understand the practical challenges faced by healthcare providers and patients in these environments.

At the end of the course, students are expected to have gained:

- Knowledge about the fundamentals of fetal development and physiology.
- Ability to perform basic fetal health assessments using ultrasound
- Recognize common fetal anomalies and disorders.
- Interpret prenatal screening results and understand their clinical significance.
- Apply knowledge in managing high-risk pregnancies with a focus on fetal well-being.
- Understand the importance of counselling families on fetal health and diagnostic findings.

## **11. COSMETIC DERMATOLOGY**

Cosmetic dermatology is a subspecialty of dermatology that deals with diagnosis and managing the conditions to improve aesthetic appearance of the individuals.

Through lectures, discussions, and hands-on exercises, students will gain an understanding of the key concepts and techniques of cosmetic dermatology and its indications in various skin conditions to improve aesthetic outcome.

### **OBJECTIVES:**

Provide comprehensive knowledge and practical skills in cosmetic dermatology and procedures, enhancing their understanding of aesthetic medicine.

At the end of the elective, the student should be able to:

- To develop the basic understanding of knowledge of anatomy and physiology of the skin, common dermatological conditions and its cosmetic implications.
- To become familiar with and observe practical skills in performing common cosmetic procedures such as chemical peels, microneedling and laser therapy.
- To get familiar with the necessary communication skills to effectively discuss cosmetic concerns with patients, address expectations, and provide realistic treatment outcomes.

### **LEARNING OUTCOMES:**

At the end of the course, students are expected to have gained:

- Thorough knowledge of skin anatomy, physiology, and common dermatological conditions relevant to cosmetic practice.
- Effective communication skills in educating patients about cosmetic procedures, managing expectations, and addressing concerns with empathy and sensitivity.

- Ability to choose appropriate cosmetic procedures by accurately diagnosing the skin condition.
- To understand the mechanism of LASERs and other cosmetic procedures and their therapeutic indications.
- Learn different steps involved in performing various cosmetic and dermatological procedures.

## **12. DERMATOSURGERY**

Dermatosurgery is a subspecialty of dermatology that deals with diagnosis and managing the conditions to improve health, functions and appearance of skin.

Through lectures, discussions, and hands-on exercises, students will gain an understanding of the key concepts and techniques of dermatosurgery and its indications in various skin conditions to improve health, functions and appearance of skin.

### **OBJECTIVES:**

Provide comprehensive knowledge and practical skills in dermatosurgery and procedures, enhancing their understanding of dermatosurgical skills.

At the end of the elective, the student should be able to:

- To develop the basic understanding of knowledge of anatomy and physiology of the skin, common dermatological conditions and its implications.
- To become familiar with and observe practical skills in performing common dermatosurgical procedures such as biopsy, cautery, fulguration, lipoma removal, sebaceous cyst or wart removal etc.
- To get familiar with the necessary communication skills to effectively discuss cosmetic concerns with patients, address expectations, and provide realistic treatment outcomes.

### **LEARNING OUTCOMES:**

At the end of the course, students are expected to have gained:

- Thorough knowledge of skin anatomy, physiology, and common dermatological conditions relevant to dermatosurgery.
- Effective communication skills in educating patients about dermatosurgical procedures, managing expectations, and addressing concerns with empathy and sensitivity.
- Ability to choose appropriate dermatosurgical procedures by accurately diagnosing the skin condition.
- To understand the mechanism of various dermatosurgical procedures and their therapeutic indications.
- Learn different steps involved in performing various cutaneous surgical and dermatological procedures.

## **13. ARTHROPLASTY & ARTHROSCOPY**

Arthroplasty is a branch of Orthopedics that involves replacing the diseased joint surfaces affected by arthritis – Primary or Secondary. At present, Hip and Knee Arthroplasty are the ones which are most commonly performed, due to the high incidence of Hip and Knee arthritis (Primary and Secondary).

Similarly, Arthroscopy is a subspecialty of Orthopedics which involves diagnosis and evaluation of the joints in a minimally invasive manner and carry out interventions simultaneously. This allows prompt and effective treatment for intra-articular bony and soft tissue pathologies. A common application of this can be seen in various pathologies of the Knee and Shoulder joint

such as Ligament and meniscal injuries, Instability, removal of foreign bodies, Sports injuries etc. Through lectures, discussions, and observation, students will gain an understanding of the key concepts and techniques of Arthroscopy and Arthroplasty. Students will also be able to learn an effective clinical examination and radiological assessment of the various disease pathologies related to the commonly affected joints.

**OBJECTIVES:**

At the end of the elective, the student should be able to:

- Perform an effective clinical examination of the Hip, Knee and Shoulder.
- Diagnose common pathologies based on clinical and radiological examination.
- Identify patients suitable for Arthroscopy and Arthroplasty based on the above.
- Understand the basic concepts and techniques used in Arthroscopy and Arthroplasty.

**LEARNING OUTCOMES:**

At the end of the course, students are expected to have gained:

- Confidence and ability to perform an effective clinical examination of the Hip, Knee and Shoulder.
- Ability to read radiographs and MRI of the Hip, Knee and Shoulder.
- Co-relate the clinical and radiological findings to formulate a diagnosis of the common pathologies affecting the Hip, Knee and Shoulder.
- An understanding of the basic concepts and techniques of Arthroscopy and Arthroplasty.

**14. DIABETIC RETINOPATHY**

Diabetic Retinopathy is one of the important microvascular complications of diabetes which needs appropriate screening, diagnosis, and treatment as it can lead to vision loss. Through lectures, discussions, and hands-on exercises, students will gain an understanding of the key concepts and techniques used in the diagnosis and classification of Diabetic Retinopathy. Students will also learn about the fundus examination as well as interpretation and use of Fundus photo and OCT.

**OBJECTIVES:**

At the end of the elective, the student should be able to:

- To develop the basic understanding of Retina, Diabetic Retinopathy and pathogenesis, stages, classification and, diagnoses of Diabetic Retinopathy.
- To become familiar with the interpretation and reporting of results of fundus examination.
- To gain an understanding of the purpose and process of Fundus photo and OCT diagnosis familiar with the interpretations and reporting.
- To familiarize with the principles, applications and interpretations of OCT.

**LEARNING OUTCOMES:**

At the end of the course, students are expected to have gained:

- Ability to understand pathogenesis, stages, classification of Diabetic Retinopathy
- Understanding of the mechanics and interpretation of Fundus examination.



- To have knowledge of the principles and applications of OCT and FFA.
- Ability to understand lasers available for the treatment of Proliferative Diabetic Retinopathy.

### **15. SPECTACLES PRESCRIPTION**

Refractive error is a problem with focusing light accurately on the retina due to the shape of the eye and/or cornea. The most common types of refractive error are near-sightedness, far-sightedness, astigmatism and presbyopia. Spectacles prescription are the most effective ways of correcting the refractive error. However, the availability and affordability of eyeglasses can present a difficulty for people in many low-income settings of the world. Through lectures, discussions, and hands-on exercises, students will gain an understanding of the key concepts and techniques of refraction.

#### **OBJECTIVES:**

At the end of the elective, the student should be able to:

- To develop the basic understanding of refractive errors and their management.
- To become familiar with eye anatomy and its optics.
- To gain an understanding of retinoscope and its uses.

#### **LEARNING OUTCOMES:**

At the end of the course, students are expected to have gained:

- Ability to prescribe spectacles
- Understanding all parameter of visual acuity.
- To have knowledge of retinoscope.
- Ability to understand different type of refractive error and prescribe lens accordingly.

### **16.ELECTROCONVULSIVE THERAPY**

Electroconvulsive Therapy (ECT) is a one of the important treatment options in various psychiatric disorders.

Through lectures, discussions, and hands-on exercises, students will gain comprehensive understanding of the Electroconvulsive Therapy (ECT), its indication, contraindications, administration, and ethical considerations surrounding ECT.

#### **OBJECTIVES:**

At the end of the elective, the student should be able to:

- Understand the historical context and evolution of ECT.
- Understand mechanisms underlying ECT's therapeutic effects.
- Identify the psychiatric disorders for which ECT is indicated.
- Identify the contraindications and potential risks associated with ECT.
- Describe the procedure and techniques involved in administering ECT.
- Explore the ethical considerations and patient consent process in ECT administration.
- Evaluate the efficacy and side effect profile of ECT compared to other treatment modalities.

#### **LEARNING OUTCOMES:**

At the end of the course, students are expected to have gained:

- Understanding of the historical background and evolution of ECT
- Understanding of the neurobiological basis of ECT's therapeutic effects, impact on neurotransmitters and brain circuits.
- Understanding of the psychiatric and non-psychiatric indications of ECT and its contraindications and precautions.
- Understanding of pre-ECT assessment and preparation, Anesthesia used during the procedure, placement of electrode and electrical parameters regarding administration of ECT.
- Understanding of pre and post ECT workup (how to do Mini Mental Status Examination).
- Ability to identify common side effects of ECT and management strategies.
- Understanding of the Ethical and legal considerations associated with ECT. Importance of patient autonomy and informed consent.

### **17. ELECTROENCEPHALOGRAPHY (EEG)**

This elective course will explore the growing intersection of Electroencephalography (EEG) and psychiatry, focusing on how EEG can be used to diagnose, monitor, and treat psychiatric disorders. Students will gain a comprehensive understanding of EEG methodology, its interpretation in psychiatric settings, and its clinical relevance in various mental health conditions. The course will combine theoretical learning with hands-on experience to ensure students are well-equipped to apply EEG in clinical practice.

Learning Objectives:

- Understand the Basic Principles of EEG and Brainwave Activity:
- Identify EEG Patterns in Common Psychiatric Disorders:
- Integrate EEG into Psychiatric Diagnosis and Treatment:
- Explore the Use of Neurofeedback and EEG-based Therapies:
- Critically Assess the Challenges and Limitations of EEG in Psychiatry

Learning Outcomes:

By the end of the course, students will be able to:

- Explain the Fundamentals of EEG Technology and Its Application in Psychiatry:
- Interpret EEG Readings in the Context of Various Psychiatric Disorders:
- Apply EEG Findings to Enhance Diagnosis and Treatment Plans in Psychiatry:
- Evaluate the Role of Neurofeedback and Other EEG-based Therapeutic Approaches:
- Assess the Limitations and Ethical Implications of Using EEG in Psychiatric Practice:

### **18. PULMONARY FUNCTION TEST IN DIAGNOSIS OF RESPIRATORY DISEASES**

Course Aims: Respiratory Medicine is a branch of medicine that deals with the study, treatment, diagnosis and prevention of respiratory and lung diseases.

Through lectures, discussions, and hands-on exercises, students will gain an understanding of the key concepts and techniques used in the diagnosis of obstructive airway diseases. Students will also learn about the significance of PFT parameters in the diagnosis of obstructive as well as restrictive airway diseases.

OBJECTIVES:

At the end of the elective, the student should be able to:

- To develop the basic understanding of the indications, contraindications of performing Pulmonary function tests.
- To become familiar with the interpretation and reporting of results of Pulmonary function tests
- To gain an understanding of the techniques of performing pulmonary function test and equipments such as spirometer.
- To familiarize with the diagnostic strategy for obstructive airway diseases and restrictive lung diseases.

#### LEARNING OUTCOMES:

At the end of the course, students are expected to have gained:

- Ability to examine, interpret and diagnose on the basis of Pulmonary function test, various obstructive and restrictive lung diseases
- Understanding of the mechanics and dynamics of spirometry and lung function tests.
- Understanding the indications and contraindications for performing Pulmonary function tests.
- To have knowledge of the principles and applications of PFT in providing Respiratory fitness preoperatively.
- Ability to understand and classify the severity of lung diseases based on PFT parameters.

### **19. TUBERCULOSIS IN COMORBID CONDITIONS**

Course Aims: Respiratory Medicine is a branch of medicine that deals with the study, treatment, diagnosis and prevention of respiratory and lung diseases.

Through lectures, discussions, and hands-on exercises, students will gain an understanding of the various clinical features of Tuberculosis in special situations like pregnancy, Diabetes, HIV, and pre-existing Liver and Renal Disease.

#### OBJECTIVES:

At the end of the elective, the student should be able to:

- To develop the basic understanding of the epidemiology and etiopathogenesis of Tuberculosis.
- To become familiar with the clinical features and diagnostic modalities used in diagnosing TB.
- To gain an understanding of the impact of comorbidities such as diabetes mellitus, hypertension, pregnancy and pre-existing liver and kidney diseases on the progression of Tuberculosis.
- To familiarize the learner with specialized investigations for TB such as ZN staining, fluorescent microscopy, TRUNAAT, Gene-Xpert
- To develop understanding regarding the management of Tuberculosis in special situations.

#### LEARNING OUTCOMES:

At the end of the course, students are expected to have gained:

- At the end of the elective, a learner should be able to identify the various clinical features of Tuberculosis in special situations like pregnancy, Diabetes, HIV, and pre-existing Liver and Renal Disease.
- At the end of electives, a learner should be able to give a probable diagnosis based on the clinical, radiological and microbiological reports and suggest probable management for the same.

### **20. ESSENTIALS OF AIRWAY MANAGEMENT**

### Learning Objectives

1. 1 To understand the concept of airway management
2. To understand which airway is challenging to intubate
3. To understand which airway is challenging to ventilate
4. To learn basic airway maneuvers to open the airways. Does & Don'ts
5. To know airway adjuncts
6. To learn essential preparation for intubation
7. To know the concept of difficult intubation cart

### Learning Outcomes

At the end of the elective the student will be able to have

- Demonstrate effective airway assessment using standardized airway evaluation tools.
- Perform basic and advanced airway management techniques, including bag-mask ventilation, oropharyngeal and nasopharyngeal airway insertion, and endotracheal intubation on manikins/simulated patients.
- Apply rapid sequence intubation (RSI) principles in a simulated emergency setting.
- Practice proper use of adjunct airway devices such as video laryngoscopy and supraglottic airway devices.

## **21. VIRTUAL ANATOMY AND 3D VISUALIZATION**

### **Course Aims**

The primary aim of this elective is to provide students with a comprehensive understanding of how virtual anatomy and 3D visualization techniques are applied in the study of human anatomy. It will focus on both the scientific principles and the practical use of cutting-edge technologies for anatomical visualization, enhancing students' understanding and exploration of the human body.

### **Course Objectives**

- Introduce the Principles of Virtual Anatomy:
  - Master 3D Visualization Tools:
  - Enhance Understanding of Human Anatomy:
  - Develop Clinical Applications
1. Foster Collaborative Learning:

### **Learning Outcomes**

By the end of the elective, students will be able to:

- Comprehend the Principles of Virtual Anatomy
- Utilize 3D Visualization Software
- Analyze Anatomical Data
- Apply Knowledge in Clinical Settings
- Collaborate Effectively
- Critically Evaluate Emerging Technologies

## **22. CRAFTING AND SUSTAINING A BALANCED DIET**

In this elective course, the fundamentals of nutrition will be taught. Students will learn how to build a well-rounded meal plan, and discover practical strategies for maintaining a healthy lifestyle. Students will dive into key food groups, portion control, and the science behind sustainable eating habits. By the end, they will be equipped with the knowledge to make informed food choices that support long-term health.

### **Objectives:**

- Calculate Daily Caloric Needs for patients suffering from various diseases ( ex. Renal diet, Diabetic diet etc.)
- Create a 7-Day Balanced Meal Plan
- Evaluate 3 Food Labels
- Track and Assess Nutrient Intake for One Week

Learning Outcomes:

- After completing the elective, students will:
- Analyse the Components of a Balanced Diet
- Develop Personalized Meal Plans
- Critically Evaluate Popular Diet Trends
- Incorporate Sustainable Eating Habits
- Understand and Apply Food Labelling

### **23. MOLECULAR TECHNIQUE IN MICROBIOLOGY**

**Description**

To introduce MBBS students to the principles and applications of molecular techniques in microbiology, with a specific focus on Polymerase Chain Reaction (PCR). Evolution of PCR from conventional techniques to advanced methods real-time PCR (RT-PCR). This will emphasize the significance of these techniques in the diagnosis of infectious diseases. Understanding these molecular approaches will enable students to advance in clinical diagnostics and management of infectious diseases.

**Objectives**

- Principles and components of Polymerase Chain Reaction (PCR), including its variations such as conventional PCR, real-time PCR (RT-PCR), and their respective applications in microbiology.
- Role of PCR in clinical diagnostics, pathogen identification, and molecular research.
- To Identify epidemiological significance of PCR, and surveillance.
- To correlate molecular diagnostic methods with traditional microbiological techniques.

**Outcomes**

- Students will gain a clear understanding of the principles and methodology of PCR, including its variations and advancements.
- Students will be able to describe the diagnostic and research applications of PCR, particularly in detecting infectious agents and analysing genetic material.
- Students understand the role of molecular techniques in improving the accuracy and efficiency of clinical microbiology diagnostics.

### **24. INTRAOPERATIVE ONCOPATHOLOGY**

**Overview:**

The Intraoperative and Oncopathology elective is designed to provide medical students with an in-depth understanding of pathology in surgical settings, particularly focusing on the diagnosis and management of cancerous tissues. This elective emphasizes the role of pathologists in the surgical team and the importance of rapid intraoperative consultations.

**Objectives:**

- Understand the principles of intraoperative pathology and its impact on surgical decision-making.
- Learn the techniques for obtaining and processing tissue samples during surgery.
- Gain insight into the types of cancers commonly encountered in surgical pathology.
- Differentiate between benign and malignant lesions based on histopathological features.
- Familiarize with the interpretation of frozen section analysis and its clinical implications.

**Learning Outcomes:**

After completing the elective, students will:

- Comprehend the role of pathologists in the intraoperative setting and the significance of timely diagnoses.
- Recognize various types of oncopathological specimens and their processing techniques.
- Identify key histopathological features differentiating benign and malignant tumors.
- Interpret frozen section reports and understand their relevance in surgical management.
- Appreciate advanced diagnostic techniques, including immunohistochemistry and molecular pathology, in the context of cancer diagnosis and prognostication.

This elective will prepare students for practical challenges in surgical oncology, enhancing their skills in pathology and allowing for a better understanding of patient management strategies in oncological care.

## **25. SPORTS PHARMACOLOGY AND ANTI-DOPING:**

### **Introduction:**

Sports pharmacology is an emerging field which comprises the use of drugs in sports, including their physiological and pharmacological effects on athletic performance. The past and emerging misuse of performance-enhancing drugs (PEDs) has raised significant ethical, medical and legal concerns in professional sports. This elective introduces the students to the pharmacology of PEDs in sports, their impact on health and the anti-doping strategies employed for the safety of athletes and assurance of fair play.

### **Objectives:**

- Provide a comprehensive understanding to the students regarding the pharmacology of PEDs and their physiological effects.
- Analysing the health risks and ethical & legal implications associated with doping.
- Familiarizing students with the regulatory frameworks and anti-doping guidelines established by the World Anti-Doping Agency (WADA).
- Developing the skills essential to educate athletes and contribute to anti-doping efforts.
- Explore strategies to Promote drug-free sports and advocate for athlete safety.

### **Learning Outcomes:**

- Understand the pharmacodynamics and pharmacokinetics of commonly used PEDs such as anabolic steroids, stimulants, and erythropoietin (EPO).
- Identify the health risks & signs of PED misuse in athletes understanding the ethical implications of doping.
- Interpret and apply WADA's prohibited substances list and anti-doping guidelines.
- Gain awareness regarding doping control measures, including sample collection techniques and testing procedures encouraging athlete education and drug-free competition.

## **26. ART IN MEDICINE: ENHANCING MEDICAL EDUCATION THROUGH VISUAL AND PERFORMING ARTS**

Various teaching learning methods are used in medical education for better understanding of the students. In this elective, visual and performing arts will be the modality used. The visual art and performing art will include image, painting, cinemaeducation, historical photographs, museum, visual mapping technique, clinical photography, infographics, use of theatre skills, role play, music, poetry, narratives, photojournalism. The students will learn various concepts through artistic expressions developing creativity and deeper engagement. This innovative approach aims to enhance understanding and retention of concepts and ethical considerations.

### **Objectives:**

- To develop observational skills through visual arts.
- To enhance communication and empathy through drama and role-play.
- To reduce stress and promote emotional well-being through music and dance.

- To foster creativity and innovation in medical education.
- **Learning Outcomes:** After the completion of this elective, the student will be able:
- To have better understanding of the complex topics.
- To understand and express emotions.
- To learn well defined concepts with the help of Cinemaeducation.
- To formulate concept map for treatment of disease condition.
- To develop better patient-doctor interactions.
- To communicate complex ideas using artistic tools.
- To build teamwork and interdisciplinary collaboration skills.

### **27. "ORGAN DONATION: FROM DEATH TO LIFE"**

A course designed to provide an in-depth exploration of the complex, multifaceted topic of organ donation and transplantation. The course typically covers the medical, ethical, legal, and societal aspects of organ donation, focusing on how the process works, the challenges involved, and its profound impact on both recipients and donors.

#### **Key objectives:**

- Understanding the Basics of Organ Donation:
- Ethical and Legal Considerations:
- Medical Criteria for Organ Donation:
- Impact of Organ Donation on Recipients:
- Challenges and Controversies:
- Promoting Organ Donation:
- Future Trends in Organ Donation and Transplantation:

#### **Learning outcomes:**

- Knowledge of Organ Donation Processes
- Understanding Ethical and Legal Frameworks
- Familiarity with Medical Criteria
- Impact of Organ Donation on Recipients
- Critical Thinking on Controversies and Challenges
- Effective Communication and Advocacy
- Awareness of Technological and Medical Advancements
- Ability to Engage in Discussions on Policy and Global Perspectives

### **28.PROBLEM-SOLVING SKILLS USING APPLIED BIOCHEMISTRY IN MEDICAL PRACTICE**

Biochemistry plays a critical role in understanding the molecular basis of health and disease, providing essential insights into clinical diagnosis, treatment, and management of various medical conditions. This elective module enhances problem-solving skills by applying biochemical principles to real-world medical scenarios. Through case-based learning, students will develop analytical thinking and diagnostic abilities essential for clinical practice.

#### **Objectives:**

- Understand the biochemical basis of diseases and their clinical manifestations.
- Apply biochemical concepts to diagnose and manage metabolic and genetic disorders.
- Develop problem-solving skills through case-based learning and biochemical investigations.
- Interpret laboratory findings and correlate them with clinical conditions.
- Enhance critical thinking and decision-making skills in biochemical problem-solving.
- Integrate biochemical knowledge with other medical disciplines to provide a holistic approach to patient care.

**Learning Outcomes:** After completing this elective, students will:

- Demonstrate a strong understanding of biochemical mechanisms underlying various diseases.
- Accurately interpret biochemical test results and correlate them with clinical presentations.
- Identify and solve biochemical problems in medical practice through logical reasoning.
- Apply biochemical principles to manage metabolic disorders, enzyme deficiencies, and electrolyte imbalances.
- Collaborate effectively with healthcare teams in utilizing biochemical investigations for patient management.
- Develop proficiency in using biochemical knowledge for differential diagnosis and treatment planning.

## **29. INTEGRATING YOGA IN MEDICAL PRACTICE: LIFESTYLE INTERVENTION FOR FUTURE DOCTORS**

Health is a fundamental human right and a worldwide social goal. The 3 basic needs of human being are food, clothing & shelter. But there is a need to add another important factor to the basic needs & that is "Health". It is important because if you lack health then it is difficult to obtain basic needs or the other way round that if you are having all basic needs and no health then it is of no use. So, health is an essential to the satisfaction of basic human needs and to improve quality of life. In modern times, health is compromised largely due to lifestyle disorders (LDs). Children, adults and the elderly are all vulnerable to the risk factors contributing to LDs and are mainly due to unhealthy diets and lifestyle, physical inactivity, and exposure to tobacco smoke or the harmful use of alcohol. These diseases are driven by forces that include rapid unplanned urbanization, globalization of unhealthy lifestyles and population ageing. Unhealthy diets and a lack of physical activity may show up in people as raised blood pressure, increased blood glucose, elevated blood lipids and obesity leading to LDs.

### **Objectives:**

- To understand the various dimensions of Health: Physical, Mental, Social and Spiritual
- To learn the concept of Yoga therapy.
- To know the various lifestyles related disorder & their pathophysiology.
- Explore the scientific basis of yoga and its application as a complementary therapy in modern medical practice.
- To understand how Yoga can be used as a therapeutic intervention.
- Concept of Integrated approach of Yoga Therapy in the treatment of diseases
- Management of the disease through Ashtanga Yoga Therapy which includes yogic diet, Asanas, Shatkarmas; Pranayama; Meditation
- Life style prescriptions - Moderation in terms of Ashtanga Yoga therapy
- Therapeutic Diet – Liberal, Moderation and Contra-indicated Dietary items
- A comprehensive study of the definition, pathophysiology, aetiology, clinical features, assessments and yoga therapy for LDs ailments of the following systems- Respiratory, cardiac, Musculoskeletal, Endocrine, neurological & psychiatric disorders.

### **Learning Outcomes-**

After completing the elective, students will:

- Understand various types of lifestyle related disorders and their pathophysiology.
- How Yoga provides prevention at early stage of disease if practised thoroughly.
- To provide holistic approach for the patient health care through Ashtanga Yoga therapy.



- To integrate yoga in the regular medical practice.
- Identify contraindications and best practices for prescribing yoga in clinical settings.
- To prescribe the yoga therapy which can be used as a preventive & therapeutic tool to rectify the risk factors involved in a various LD.