



# **ANAESTHESIOLOGY**

**Training Program  
Leading to**

**MD DEGREE**

**SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY  
ISLAMABAD**



# **CURRICULUM BRIEF**

**MD In**

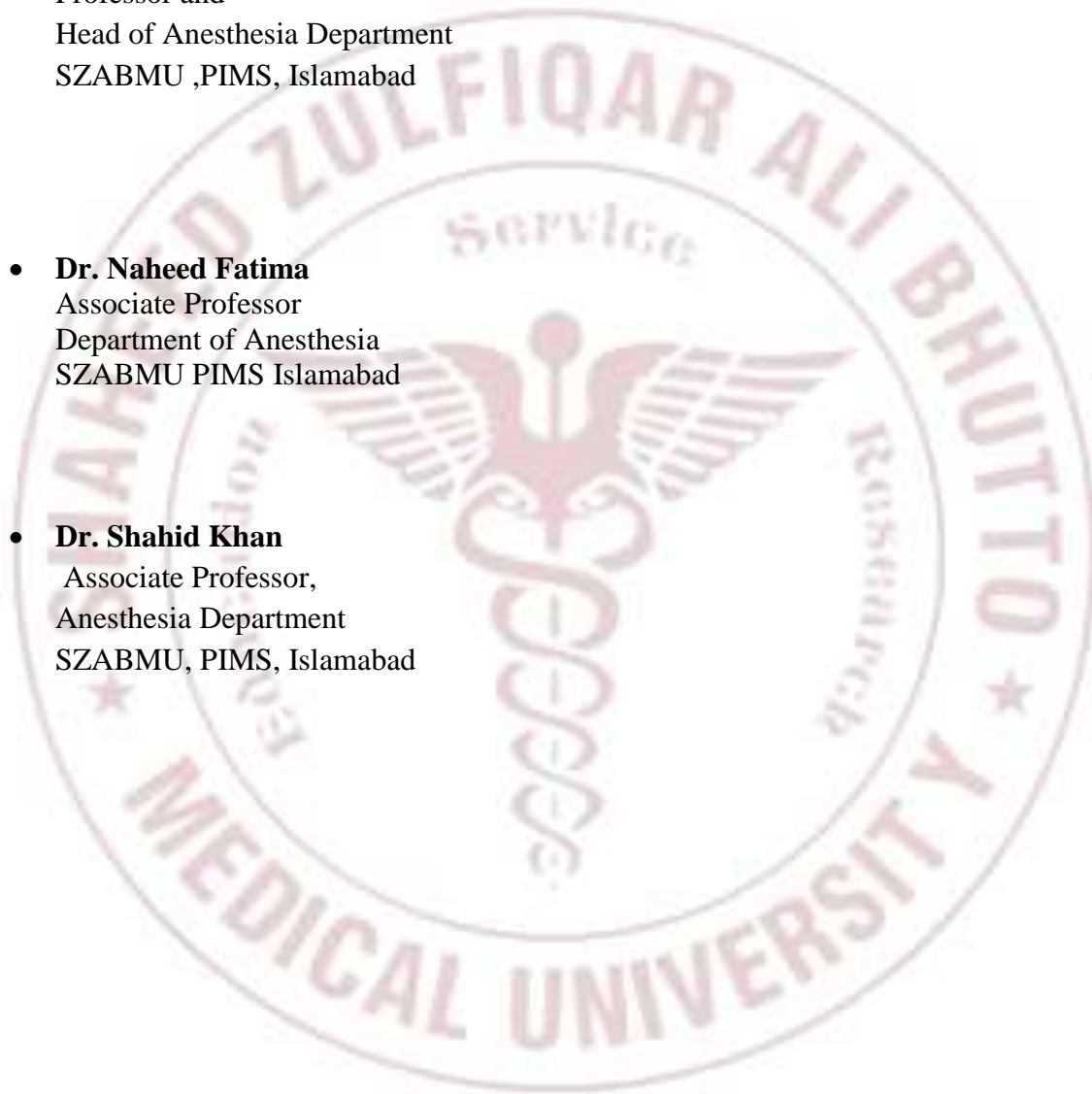
**Anaesthesiology**



**CURRICULUM DEVELOPMENT COMMITTEE**

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# SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY

## ROAD MAP OF MD Anaesthesiology (A Brief Summary)

### GENERAL INFORMATION AND PROGRAM GOALS:

The four years MD programme in Anaesthesiology is designed to train residents to acquire the competency of a specialist in the field so that they can become good teachers, researchers and clinicians in their specialty after completion of their training.

The University offers a 04-year MD program in the field of Anesthesiology. This program intends to attract candidates that have an interest in Anesthesia. The curriculum focuses on supervisor led training and research.

#### ○ **COURSE DESCRIPTION:**

- The program consists of eight (08) semesters, which are specific to the field of Anesthesiology and ICU. The name of degree program shall be MD Anesthesiology as practiced in various Universities.

#### ○ **Course Title:**

- MD Anesthesiology

#### ○ **Training Center:**

- Department of Anesthesiology and Critical Care Medicine, Pakistan Institute of Medical Sciences (University Hospital) Islamabad

#### ○ **Faculty members:**

- Faculty members will include existing staff from Professors to assistant Professors in Anesthesia and Critical Care Medicine department of University.

#### ○ **Duration of Course:**

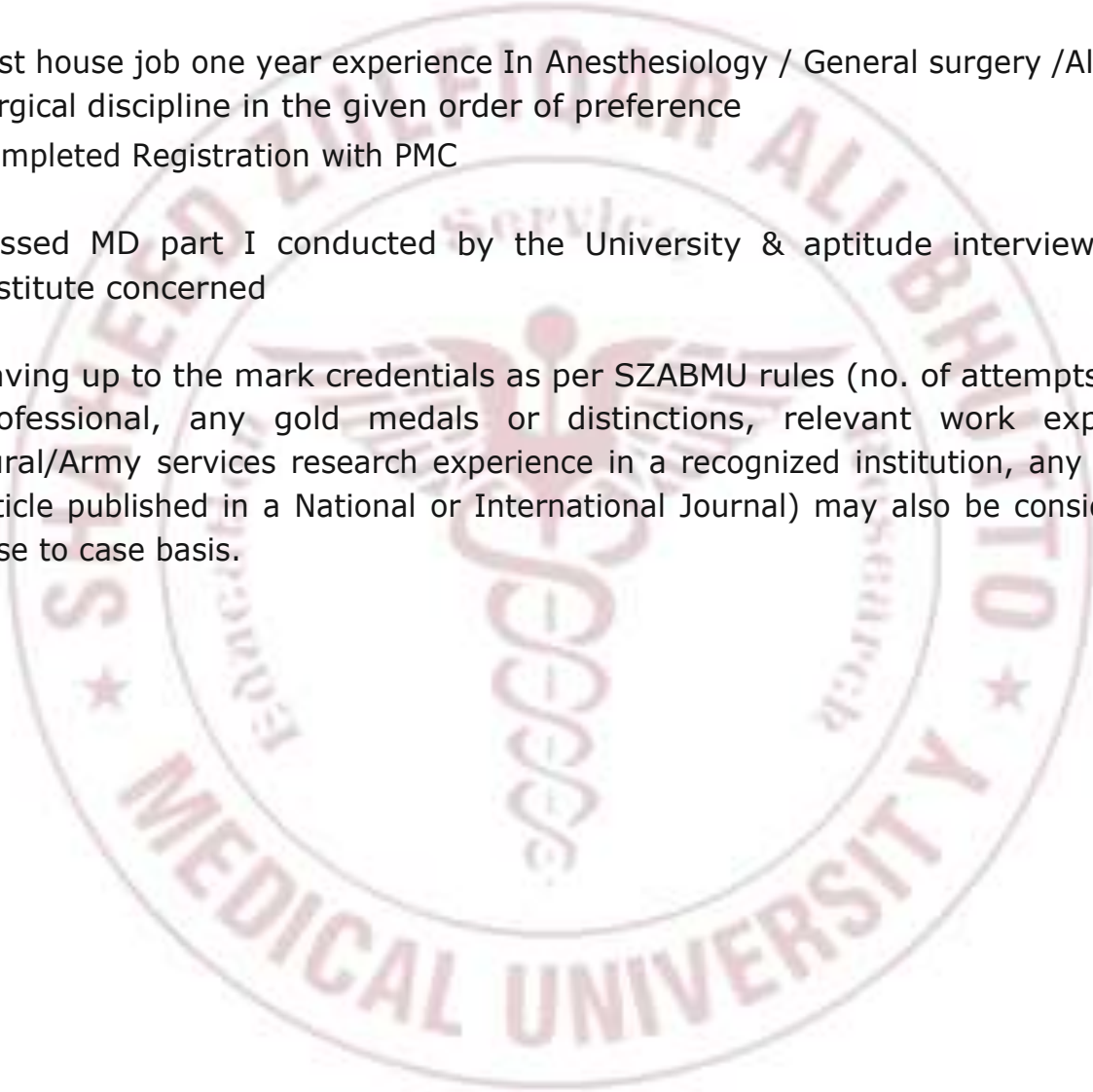
- The duration of MD Anesthesiology course shall be four (4) years divided in eight semesters with structured training in each semester under the guidance of approved supervisors.



## SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY

### ○ **Admission Criteria:**

- For admission in MD Anesthesiology course, the candidate shall be required to have:
- MBBS degree
- One year House Job in Anesthesia/Medicine/Surgery
- Post house job one year experience In Anesthesiology / General surgery /Allied surgical discipline in the given order of preference
- Completed Registration with PMC
- Passed MD part I conducted by the University & aptitude interview by the Institute concerned
- Having up to the mark credentials as per SZABMU rules (no. of attempts in each professional, any gold medals or distinctions, relevant work experience, Rural/Army services research experience in a recognized institution, any research article published in a National or International Journal) may also be considered on case to case basis.



○ **Registration and Enrollment:**

- Total number of students enrolled for the course must not exceed 2 per supervisor/year.
- The maximum number of trainees that can be attached with a supervisor at a given point of time (inclusive of trainees in all years/phases of MD training), must not exceed 6.
- There are twenty two operation theatres and twenty beds for surgical and medical ICUs. The trainees will be rotated in all theatres according to semester wise distributions.
- The University will approve supervisors for MD courses.
- Candidates selected for the courses shall be registered with SZABMU as per prescribed Registration Regulation.

○ **Accreditation Related Issues of the Institution:**

○ **Faculty:**

Properly qualified teaching staff in accordance with the requirements of Pakistan Medical and Dental Council (PMC)

○ **Adequate Space**

Including class-rooms (with audio visual aids)

○ **Library**

Departmental library should have latest editions of recommended books, reference books and latest journals (National and International).

○ **NOTE;**

Accreditation of Anesthesiology training program can be suspended on temporary or permanent basis by the University, if the program does not comply with requirements for residents training as laid out in this curriculum.

- Program should be presented to the University along with a plan for implementation of curriculum for training of residents.

- Programs should have documentation of residents training activities and evaluation on monthly basis.

- ~~To ensure a uniform and standardized quality of training and availability of the training facilities, the University reserves the right to make surprise visits of the training program for monitoring purposes and may take appropriate action if deemed necessary.~~

### 1. Scheme of the Course

A summary of four years course in MD Anesthesiology's presented as under:

Course Structure	Modules	Credit Hours
1 <sup>st</sup> Semester	<b>Basics in Anesthesia</b> <ul style="list-style-type: none"> <li>• Anatomy               <ul style="list-style-type: none"> <li>• Physiology</li> <li>• Pathophysiology</li> <li>• Pharmacology related to Anesthesia</li> <li>• Patient Safety</li> <li>• Ethical aspects of Anesthesia</li> <li>• Airway management skills</li> <li>• Introduction to general anesthesia</li> <li>• Basic life Support(BLS)</li> <li>• Clinical Rotation in operation theater As Observe red in emergency OT</li> </ul> </li> </ul>	12.0
2 <sup>nd</sup> Semester	<b>Anaesthesia Management</b> <ul style="list-style-type: none"> <li>• Advanced, Cardiac life Support (ACLS)</li> <li>• Risk of anesthesia</li> <li>• Preoperative Evaluation</li> <li>• Anesthetic implications of concurrent diseases</li> <li>• Monitoring of vital organs during anesthesia</li> <li>• Spinal Anaesthesia</li> <li>• Clinical Rotation in operation theater Assistant under supervision</li> </ul>	15.0
3 <sup>rd</sup> Semester	<ul style="list-style-type: none"> <li>• Clinical Rotation in operation theater under supervision and in Emergency OT</li> <li>• Ultrasound guided CVP placement</li> <li>• Nerve blocks: Landmarks and Ultrasound guided</li> <li>• Intravascular fluid and electrolyte therapy</li> <li>• Transfusion therapy</li> <li>• Coagulation</li> </ul>	15.0
4 <sup>th</sup> Semester	<ul style="list-style-type: none"> <li>• Clinical Rotation in operation theater under supervision and in Emergency OT</li> <li>• Acute Pain Management</li> <li>• Anaesthesia for ASA I and II patients in general surgery, ENT, EYE, Plastic, Oral and Maxillofacial OT, Laparoscopic surgery</li> </ul>	15.0



**5<sup>th</sup> Semester**

- Clinical Rotation in operation theatre and In Emergency OT
- 
- Anaesthesia for in Day Care Patients, geriatric patients
- In Urology, and Orthopedic surgery, Neurosurgery, Trauma patients
- Obstetric surgery, Burn patient surgery
- Training in clinical audit, Survey report, presentation in clinical meetings of Society and in Grand round

○ 18.0

**6<sup>th</sup> Semester** Anaesthesia for Hepatobiliary surgery.

- Anaesthesia for Electroconvulsive therapy, for patients in radiology, Paediatric and neonatal anaesthesia
- Synopsis writing must be completed and submitted for approval

7 <sup>th</sup> Semester	<ul style="list-style-type: none"> <li>• Clinical Rotation in Critical Care Medicine: EAC, CC</li> <li>• Review of literature for the synopsis writing</li> <li>• Data Collection for thesis</li> </ul>	18.0
8 <sup>th</sup> Semester	<ul style="list-style-type: none"> <li>• Cardiac Anaesthesia and Cardiac Surgery ICU</li> <li>• Critical Analysis of data</li> <li>• Chronic Pain Management- visits at Pain clinic at Shifa International and Pain Center at Military Hospital Rawalpindi</li> </ul>	18.0
<p><b>Requirements of MD Degree for Graduate students Enrolled in the Program.</b></p> <ul style="list-style-type: none"> <li>• Fulfillment of University requirements for postgraduate study.</li> <li>• Four (4) years of consecutive full-time advanced study and training.</li> <li>• Complete and approved master's thesis based on original research during the course of study in an area related to specialty, suitable for publication in a reputable Medical journal.</li> <li>• Must complete all didactic &amp; clinical work in the required curriculum and satisfactorily pass all the University examinations.</li> <li>• A minimum of 60% must be earned in all work/examinations attempted in the master's program. A grade below this will require re-examination.</li> </ul> <p>A complete road map for postgraduate MS/MPhil/MD/MDS can be seen on University website at <a href="http://www.szabmu.edu.pk/content/downloads/road-map-for-postgraduate-residents.pdf">http://www.szabmu.edu.pk/content/downloads/road-map-for-postgraduate-residents.pdf</a></p>		
10 <sup>th</sup> Semester	<ul style="list-style-type: none"> <li>• Submission to Examination department SZABMU</li> <li>• Clinical Rotation in operation theater and in Emergency OT</li> <li>• Thesis</li> </ul>	17.0 6.0

# INTRODUCTION

# INTRODUCTION

The residency program in MD Anesthesiology is a four-year program leading to the degree of MD.

This curriculum has been developed on the basis of SPICES model which is indicative of the competencies required at the varying levels of training within the specialty together with the knowledge, skills and attitudes achieved by the trainee in acquiring those competencies.

The training has been based on the current thinking and the requirements for

- Greater protection of the public interest by providing clear information as to the level of training achieved.
- Improved access to specialty training than general practitioners.
- Greater flexibility of training through the availability of multiple instructors.
- Producing a competent workforce with the appropriate skills and knowledge necessary to meet the varying levels of treatment complexity, as well as considering the relative need and demand of potential patients.
- Acquire the experience to carry out research projects, critically evaluate scientific publications and communicate clinical and research papers in journals and conferences.

# **RATIONALE**

## ○ **RATIONALE:**

### **Need of program**

- This training program is structured keeping in view the need of the society. Following needs are identified through formal and informal discussion with the stakeholders.
- Dearth deficiency of competent faculty in the field.
- Deficiency of state of the art training center.

### **Purpose of training**

- The purpose of this curriculum is to guide the training of an individual to the core level of competence required for specialist and consultant. This training will produce consultant who are specialists in their field.

### **Context of Training**

- To provide an organized educational program with guidance and supervision, a structured training program will be followed so that each trainee is exposed to different aspects of the subject and acquires special knowledge and skill as expected in this program. The training will provide a basis for the candidate to develop into a lifelong learner who is capable of self-reflection and self-directed learning. It will provide a basis for further ongoing development in the field.

### **Duration of training**

- The program leading to MD Anesthesiology will be of 04 years full time.

# **AIMS & OBJECTIVES**

## **AIMS & OBJECTIVES.**

- The aim of four years MD programme in Anesthesiology is to train residents to acquire the competency of a specialist in the field so that they can become good teachers, researchers and clinicians in their specialty after completion of their training.

- **GENERAL OBJECTIVES**

- MD Anaesthesiology training should enable a student to:

**Access and apply relevant knowledge to clinical practice:**

- Apply scientific knowledge in practice appropriate to patient need Critically evaluate new technologies.

**Safely and effectively performs appropriate anaesthesia procedures:**

- Consistently demonstrate anaesthesia skills.
- Demonstrate procedural knowledge and technical skill at a level appropriate to the level of training.
- Demonstrate manual dexterity required to carry out procedures.
- Adapt their skills in the context of each patient and procedure.
- Maintain and acquire new skills.
- Approach and carries out procedures with due attention to safety of patient, self and others.
- Critically analyze their own clinical performance for continuous improvement.

**Design and implement effective management plans:**

- Recognize the clinical features, accurately diagnose and manage anaesthesia related problems. Formulate a well-reasoned provisional diagnosis and management plan based on a thorough history and examination.
- Formulate a differential diagnosis based on investigative finding.



- Manage patients in ways that demonstrate sensitivity to their physical, social, cultural and psychological needs.
- Recognize disorders of the human body and differentiate those amenable to surgical treatment.
- Effectively manage the care of patients with trauma including multiple system trauma.
- Effectively recognize and manage complications.
- Accurately identify the benefits, risks and mechanism so faction of current and evolving treatment modalities.
- Indicate alternative sin the process of interpreting investigations and indecision-making.
- Manage complexity and uncertainty.
- Consider all issues relevant to the patient.
- Identify risk.
- Assess and implement a risk management plan.
- Critically evaluate and integrate new technologies and techniques.

**Organized diagnostic testing, imagine grand consultation as needed:**

- Select medically appropriate investigative tools and monitoring techniques in a cost - effective and use full manner.
- Appraise and interpret appropriate diagnostic imaging and investigations according to patients' needs.
- Critically evaluates the advantages and disadvantages of different investigative modalities.

## **Communicate effectively:**

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- Communicate appropriate information to patients (and their family) about procedures, potentialities and risks associated with different anesthesia techniques in ways that encourage their participation in informed decision making.
- Communicate with the patient (and their family) the treatment options including benefits and risks of each.
- Communicate with and co-ordinate health management teams to achieve an optimal surgical environment.

## **Recognize the value of knowledge and research and its application to clinical practice:**

- Assume responsibility for self-directed learning.
- Critically appraise new trends in Anesthesiology.
- Facilitate the learning of others.

## **Appreciate ethical issues associated with Anesthesiology**

- Consistently applying ethical principles.
- Be accountable for the management of their patients.

## **Professionalism by:**

- Employing a critically reflective approach to Anesthesiology.
- Adhering with current regulations concerning workplace harassment.
- Regularly carrying out self and peer reviewed audit.
- Acknowledging and have in sight in to their own limitations.
- Acknowledging and learning from mistakes.

## **Work in collaboration with members of an inter disciplinary team where appropriate:**

- Collaborate with other professionals in these lection and use of various types of treatments assessing and weighing the indications and contraindications associated with each type.
- Develop a care plan for a patient in collaboration with members of an inter disciplinary team.
- Employee consultative approach with colleagues and other professionals.
- Recognize the need to refer patients to their professionals.

## **Management and Leadership**

- Effective use of resources to balance patient care and system resources identify and differentiate between system resources and patient needs.
- Prioritize needs and demands dealing with limited system resources.
- Manage and lead clinical teams.
- Recognize the importance of different types of expertise which contribute to the effective function in clinical team.
- Maintain clinically relevant and accurate contemporaneous records.

## **Health advocacy:**

- Promote health maintenance of patients.
- Advocate for appropriate health resource allocation.

# **CONTENT OF LEARNING:**

**CONTENT OF LEARNING:**

- 1) minimum of four years of formal training through a graded system of
- 2) education as specified will equip the trainee with knowledge, skill and
- 3) attitude at its completion to be able to practice basic oral and maxillofacial
- 4) Surgery competently.
- 5) Curriculum For Intermediate Module/ Mid term Assessment
- 6) (1<sup>st</sup> year ----2<sup>nd</sup> year)

Following topics are selected to facilitate the trainee to achieve the goals of fellowship in the following areas of cognition and to acquire laid down skills & attitude.

**Section A: Applied Basic Sciences**

1. Clinical Pharmacology
2. Clinical Anatomy, Physiology
3. Applied Physics, Anesthesia Machine & Monitoring Equipment
4. Clinical measurement

**Section B: Co-existing Diseases**

1. Patho-physiology & management
2. Decision making and referral

**Section C: Clinical Anesthesia for different Surgical Disciplines, General/Regional/Local**

1. Pre-operative assessment, Preparation & Risk assessment
2. Intra operative management
3. Post operative care
4. Critical Incidents & Crises management

**Section D: Resuscitation & Trauma Medicine**

1. Cardio pulmonary resuscitation BLS/ACLS
2. Advanced Trauma Life Support
3. Trauma Medicine

**Section E: Critical care management**

1. Clinical
2. Administrative

**Section F: Pain management**

1. Clinical
2. Administrative

**Applied Clinical Pharmacology;**

- General Concept of pharmacokinetics and pharmacodynamics
- Intravenous Anesthetics
- Inhalational Anesthetics
- Local Anesthetics
- Neuro muscular blockers and reversal agents
- Analgesics - Opioids /Opioid Antagonists/ Non Opioids
- Sedatives – e.g. Benzodiazepines
- Anticholinergics
- Premed icants - Anxiolytics, Antisialagogues, Prokinetics, Antiemetics, Regurgitation Prophylaxis
- Adrenergic / Antagonists / Hypotensive agents
- Pharmacology & Provision of Regional Anesthesia
- Adjuvants - Antidepressants –
- Anti-arrhythmic
- Antihistamines

**Applied Physics, Anesthesia machine & Monitoring Equipment**

- Physical laws, gas ,liquid.
- Concepts of vapor pressure, B/G solubility, O/G Solubility, boiling point, critical temperature and pressure, MAC
- Operation theatre environment, Humidity & humidification, Electrical safety
- Safety of operation theatre personnel
- Cleaning & sterilization of equipment
- Anesthesia machine
- Breathing circuits
- Ventilators,
- Oxygen Therapy Devices & Ventilator
- Scavenging system
- Monitoring equipment - Principles & Functioning
  - Oximeter
  - Capnography
  - Electrocardiography
  - NIBP monitor

**Clinical measurement - interpretation and limitations**

- Capnography
- Arterial blood gas analysis
- B.P measurement, Non invasive
- Interpretation of Electrocardiogram
- Principles of Central Venous Pressure Monitoring

- Peripheral Nerve Stimulator
- Monitoring of Renal / Hepatic / Hematologic System.
- Interpretation of imaging & ultrasound
  - Plain X-Ray - Neck, Chest, Spine
  - Ultrasound
- Fetal monitoring - Basic Concept

## **Section B: Understanding of Co-existing Diseases Pathophysiology, Management and Anesthetic implications**

- Anatomy of Spinal cord, its coverings , Formation of Cerebral spinal fluid Vertebral column, Dermatomal distribution
- Pain pathways, Neurotransmitters
- CSF, Intracranial Pressure, Cerebral Circulation and Determinants of Cerebral Blood Flow
- Effects of anesthetics on the CNS ,Gate way theory
- Pathophysiology of Head Trauma
- Coronary Artery Disease
  - Hypertension
- Dysrhythmias and Heart Blocks
- Upper Respiratory Tract Infections & Pathologies
- Chronic Obstructive Airway Diseases
  - Asthma
  - Restrictive Airway Disease
  - Obstructive Sleep Apnea
- Pneumo./Hemo./Hydrothorax
- Thyroid Dysfunction
- Diabetes Mellitus

### Body Compartments and Body Fluids

- Renal Functions and Renal Blood Flow, Renal Function Tests
- Acid-Base control
- Fluid and Electrolyte Balance and Calcium & Magnesium
- Acute and Chronic Renal Failure
  - Acid-Base Disturbances
    - Water & Electrolyte Imbalance
    - Muscular-Skeletal & Neuromuscular Diseases
    - Interpretation of Peripheral Nerve Stimulator
    - Myasthenia Gravis & Myasthenic Syndrome
    - Guillain Barre's Syndrome
    - Tetanus
  - Anaemias
  - Coagulopathies
  - Platelet disorders
  - Obesity

- Geriatrics
- Obstetrics , Physiology of the Uteroplacental Unit - Placental Drug Transfer
  - Physiology of pregnancy
  - Principles of Fetal Assessment and Monitoring (CTG)
  - Neonatal and Pediatric Anatomical & Physiological Changes
- Medical Diseases Complicating Pregnancy
- Surgical Conditions Concurrent with Pregnancy
- Pre-eclampsia and Eclampsia
- Obstetric hemorrhage and Resuscitation
- Amniotic Fluid Embolism
- Labor Pain Pathways and Physiology
- Liver - Effects of Anesthesia and Surgery on Liver Function, Hepatitis and its implication, Cirrhosis.

## **Section C: Clinical Anesthesia for Different Surgical Disciplines**

### **Pre-operative Assessment and Management with Risk**

#### **Assessment**

- History taking, Physical examination
- Optimization & Advice
- ASA grading, Risk Assessment, Airway Assessment ,Prediction of Peri-operative M&M
- Anesthetic implications of Surgical conditions,
- Emergency implications of Concurrent medical therapy and advice
- Pre-medication and request for Blood and Blood Products
- Pre-operative fasting guidelines
- Informed Consent and Counseling
- Plan of Anesthesia - General / Regional, Day Care /Inpatient.

#### **Post-Operative Care**

- PACU orders, monitoring, Analgesia, Oxygen therapy. Discharge criteria

#### **Anesthesia for Surgical Disciplines**

- laparoscopy procedure
- Orthopedics
- Traumatology & Resuscitation
- ENT
- EYE
- Facio-maxillary
- Dental
- Day Care Surgery

#### **Critical Incidents, Crisis Management**

Implications of intra-operative events



- Cardiovascular System
  - Hypertension, Hypotension
  - Dysrhythmias, Heart Blocks, Cardiac Arrest
  - Myocardial Ischemia
- Respiratory System
  - Hypoxia, Hypo and Hypercapnia
  - Airway Obstruction
  - Laryngospasm, Bronchospasm
  - Pulmonary edema
  - Pulmonary Aspiration
  - Pneumothorax
  - CICV
  - Pulmonary Embolism
  - Air Embolism
- Drug Induced Crisis
  - Over dosage
  - Delayed Recovery
  - Sux. Apnea
  - Dual Block
- Awareness
- Malignant Hyperthermia
- Anaphylaxis

#### **Section D: Resuscitation and Trauma Medicine**

- Adult Resuscitation - BLS & ACLS
- Neonatal Resuscitation - BLS
- PALS - Basic concepts
- Advanced Trauma Life Support
- Principles of Triage and Trauma Scoring
- Principles of Damage Control Surgery
- Principles of Fluids Resuscitation in Trauma
- All Resuscitative Fluids, Devices & Equipment
- Head & Spinal Trauma
- Trauma of other Body Parts

#### **Section E: Critical Care Management** **Clinical Management**

Admission & Discharge Criteria Critical Care Management of commonly admitted<sup>26</sup> patients to ICU (e.g.) Tetanus, G.B, Sepsis, Shock, MODS, Head trauma, Poly trauma, Obstetric Cases.

- Knowledge of systemic support of all systems required by a critically ill patient (e.g.) Cardiac, Renal, Hematologic, Nutritional
- Respiratory failure and Respiratory support including all forms of Oxygen-therapy and devices and Ventilator parameters, Modes of ventilation.
- Brain Death & Vegetative States.
- Managing emergencies like Diabetic Ketoacidosis, Massive hemorrhage, Status Asthmatics, Status Epilepticus, Acute Renal Failure, Acute Hepatic Failure, Disturbance of Temperature regulation.
- Poisoning & Envenomation.
- General nursing care & Infection Control.
- Analgesia & Sedation.
- Comprehensive Anatomical, Physiological & Pharmacological knowledge be familiar with invasive procedures.to carry out the invasive procedures safely under supervision.

## **Section F: Pain Management**

### **Clinical Management**

- - Pharmacological Management of Pain with Analgesics, Anesthetics and Adjuvants.
  - Knowledge of Basic alternative techniques

### CLINICAL SKILLS

(Observe and practice in a operation theater)

- **ASA I-II, Elective & Emergency in Minor, Moderate and Major Surgeries**

- History, Physical Examination, Interpretation of Investigations, Cervical Spine
- Management of concurrent illness and medications for pre-op. assessment.
  - Pre-op medications, & preparation
  - Decision making on referral / consult
  - Risk assessment, Anesthesia Plan
  - Administration of Anesthesia
  - Recovery and Post-op Care
  - Crisis Management & Resuscitation
  - Documentation of Records

### **Communication and counseling skills**

#### **ASA I -II, Elective & Emergency in Minor, Moderate and Major Surgeries**

- Counsel all patients and their relatives
- Communicate with colleagues of related disciplines about the techniques, risks and intervention in major and complicated surgeries
- Obtain Informed consent
- Counsel on crisis and management of complications
- Presentation Skills
- Procedural skills

#### **To observe and perform under supervision in operation theatre**

##### **1. Intra - Vascular Access and Interpretation of graphs**

Peripheral I/V cannulation

Central I/V cannulation

Arterial cannulation

##### **2. Airway Management**

Mask, Guide Airway, Nasal airways

Supra glottis Devices

Endotracheal Intubation

Mallampati I & II

Mallampati III & IV

Cricothyroidotomy

Percutaneous Dilatational

Tracheostomy

Video Assisted Intubation

Bronchoscopy

Thoracostomy

### **3. Regional Techniques**

Sub-arachnoid Block

Epidural / Caudal

Combined Spinal Epidural

Local Blocks (Miscellaneous)

Brachial Plexus Blocks

Wrist Block

Intercostal Block

TAP Block

Sciatic Block

Three in One Block

Popliteal Block

Biers Block

Ankle Block

Information Oximetry, Capnography,

NIBP, ECG, Temperature, Peripheral Nerve Stimulator

**They are also expected to complete and submit their dissertation**

**SYLLABUS**

**Section A: Applied Basic Sciences**

**Section B: Understanding of Co-existing Diseases**

**Section C: critical Incidents, Crisis Management, Minimum Monitoring Standards**

**Section D: Resuscitation & Trauma Medicine**

**Section E: Critical Care Management**

**Section F: Statistics and Research Methods**

**Section A: Applied Basic Sciences**

1. Applied Clinical Pharmacology
2. Applied Physics, Anesthesia machine & Monitoring Equipment
3. Clinical measurement - interpretation and limitations

***A) Anesthetic interaction and pharmacological management of***

- 1) Cardio vascular disease
- 2) Respiratory diseases
- 3) Hepatic & Renal disease G.I. Problems
- 4) Pituitary, Thyroid, Adrenals
- 5) Diabetes Mellitus
- 6) Diabetes Insipidus, Syndrome of Inappropriate Secretion of Anti-Diuretic Hormone
- 7) Malignant hyperthermia
- 8) Porphyria
- 9) Surgery, Anesthesia and Stress Response
- 10) Epilepsy
- 11) Psychiatric disorders
- 12) Bacterial, Fungal and Viral infection
- 13) Anticoagulants and Thrombolytic
- 14) Cardio pulmonary bypass, Cardioplegia
- 15) Thermoregulation
- 16) Anaphylaxis

## **B) Pharmacological techniques**

- 17) TIVA
- 18) Sedation techniques
- 19) Acute and Chronic Pain  
Opioids, Non-Opioids and Adjuvants
- 20) Non-Pharmacological methods, TENS, Acupuncture, Cryotherapy,  
Radiofrequency
- 21) Patient Controlled Systemic and Epidural Analgesia
- 22) Regional & Peripheral Nerve Blocks
- 23) Inhalational Analgesia

## **2 Applied Physics, Anesthesia machine & Monitoring Equipment**

### Monitoring Equipment

- 24) IBP monitoring devices
- 25) CFAM
- 26) Evoked potentials
- 27) BIS monitor
- 28) Temperature monitor
- 29) PA Catheters / Central Venous Catheters
- 30) Storage of medical gases & principles of FIO<sub>2</sub> Analyzer
- 31) Principles of gas and inhalation agent analysis
- 32) Neuromuscular Monitoring Devices-Nerve Stimulator,  
Nerve Locator
- 33) Cardiac Rhythm Devices-Pacemakers, ICD, Defibrillator  
Interpretation of values and graphs of Oximetry, Capnography, Pulmonary  
function test, Arterial blood gas analysis, V/Q scanning
- 34) Interpretation of values and graphs of ECG, Echocardiography , TEE,  
Cardiac output and Derived Indices, Invasive and Noninvasive - All forms,  
NICO, PICCO, LIDCO, Central Venous Pressure & Pulmonary  
Artery Pressure Monitoring
- 35) Monitoring of Renal / Hepatic / Hematologic System  
Interpretation of relevant investigations
- 36) Interpretation of imaging & ultrasound
  - Plain X-Ray, Neck, Chest, Spine
  - Ultrasound
  - Doppler
  - CT, MRI (Basic Concepts)

**Section B: Understanding of Co-existing Diseases of Pathophysiology, Management and Anesthetic implications of common systemic medical diseases to be able to make decisions on conducting, postponing or referring for consultation Common Medical Diseases**

- 37) Seizure Disorders
- 38) Psychiatric Disorders
- 39) Head Trauma
- 40) Coronary Artery Disease
- 41) Hypertension
- 42) Dysrhythmias & Heart Blocks
- 43) Valvar Heart Disease
- 44) Congestive Cardiac Failure
- 45) Cardiomyopathies
- 46) Cor pulmonale
- 47) Pacemaker / ICD/Stents
- 48) Upper Respiratory Tract Infections & Pathologies
- 49) Chronic Obstructive Airway Diseases
- 50) Asthma
- 51) Restrictive Airway Diseases
- 52) Obstructive Sleep Apnea
- 53) Pneumo./Hemo./Hydrothorax
- 54) Evaluation for One Lung Anesthesia
- 55) Pituitary Dysfunction - (Anterior and Posterior)
- 56) Thyroid Dysfunction
- 57) Parathyroid Dysfunction
- 58) Diabetes Mellitus / Insulinoma
- 59) Adrenal Cortical & Medullary Conditions Esp. Pheochromocytoma.
- 60) Acute and Chronic Renal Failure
- 61) Nephrotic Syndrome
- 62) Acid-Base Disturbances
- 63) Water & Electrolyte Imbalance
- 64) Myasthenia Gravis & Myasthenic Syndrome
- 65) Guillain Barre's Syndrome
- 66) Tetanus
- 67) Rheumatoid Arthritis
- 68) Sarcoidosis
- 69) Perkin sons Disease
- 70) SLE
- 71) Ankylosing Spondylitis
- 72) Muscular Dystrophy
- 73) Cancer and its anesthetic Implications
- 74) Immunological Disorders & Immunosuppression
- 75) Anemias
- 76) Coagulopathies
- 77) Platelet disorders
- 78) Transfusion therapy -/ autologous transfusion technique/blood conservation
- 79) Obesity

- 80) Geriatrics
- 81) CPR in a pregnant patients
- 82) Medical Diseases Complicating Pregnancy
- 83) Surgical Conditions Concurrent with Pregnancy
- 84) Pre-eclampsia, Eclampsia& HELLP
- 85) Obstetric Hemorrhage & Resuscitation
- 86) Amniotic Fluid Embolism
- 87) Labour Pain Pathways and Physiology
- 88) Hepatitis and its implication
- 89) Cirrhosis
- 90) Hepatic Encephalopathy
- 91) PEADIATRIC
  - Pre-operative Assessment
  - Peri-op Fluid Management
  - Common Congenital anomalies and their anaesthetic implications
  - Paediatric Airway Emergencies
- 92) Trauma & Burns
- 93) Malignant Hyperthermia
- 94) Genetic disorders
  - Turner's syndrome
  - Trisomy

## **Surgical Disciplines topics to be teach in operation theatre during patient management and then presented as case discussion**

Details of Surgical Disciplines

### 1. General Surgery

Cholecystectomy, Appendectomy, Bowel Obstruction, Perforation and Bowel Resection. Acute Gastrointestinal Bleeding, Splenectomy, Pancreatic Resection, Hepatic Resection, Portal Shunting Procedures, Adrenal Surgery, Laparoscopic Surgery, Effects of Abdominal Surgery on Pulmonary Function and Postoperative Pulmonary Complications, Postoperative Intestinal Dysfunction,

### 2. Obstetrics / Gynecology

Preterm Labor, D/C & D/E, Operative Vaginal Delivery, C-Section for all obstetric conditions, Non-Obstetric Surgery in Obstetric patients, Total Abdominal Hysterectomy, Bilateral Salpingo Oophorectomy, Obstetric Hemorrhage

### 3. Pediatrics / Neonatal



Monitoring and Specialized Equipment for Pediatric Anesthesia, Common Pediatric Syndromes and Emergencies, TE fistula, Diaphragmatic Hernia, Ex omphalos, Hirshrungs Disease, Intestinal Atresia, Pyloric Stenosis, Below Umbilicus Surgeries like Inguinal Hernia, Undescended Testis, Imperforate Anus, Pediatric Urology, FB in airway, epiglottitis, Ex-premie, Anesthesia outside OR. 33

#### 4. Orthopedics

DVT prophylaxis, Fat Embolism, Pulmonary Embolism, Compartment Syndrome, Cement implantation syndrome, Surgery under Tourniquet, Upper limb Surgeries, Lower limb Surgeries, Spine Surgery.

#### 5. Neurosurgery

Air embolism, Intracranial hypertension, Induced Hypotension, Subarachnoid hemorrhage Seizures, Methods of Brain Protection, Declaration of Brain Death, Head Trauma, Evacuation of Hematoma, Cerebral Aneurysms, Occlusive Cerebral vascular Disease, AVM, Cerebral Aneurysm, Posterior Fossa Surgery, Spinal Cord Surgery, Pituitary Tumors, Interventional Neuroradiology, Epilepsy Surgery, Pediatric Neurosurgery.

#### 6. Cardiac Surgery

Valvular Disease, CABG & Management of CPB

#### 7. Thoracic Surgery

Pathophysiology of lateral position and open thorax, One Lung Anesthesia, Tracheal Resection, Lung Resection, Airway Laser Surgery, Esophageal Surgery, Thoracoscopic Surgery, Broncho pleural Fistula, Pulmonary Hemorrhage, Bullae and Pneumothorax, Post-Thoracotomy Analgesia.

#### 8. Vascular Surgery

Thoracic Aneurysm Surgery, Abdominal Aneurysm Surgery, Peripheral Vascular Surgery, Carotid Endarterectomy, Emergency Vascular Surgery.

#### 9. Laser Surgery

Types of lasers and their use, Hazards of laser surgery and appropriate precautions, Management of airway fire.

#### 10. Transplant Surgery (Renal, Hepatic)

Preoperative Assessment, Preparation and Management of Recipient for Kidney, Liver

### 11. Anesthesia outside OR

Personnel, Patient Selection, Monitoring, Transport, Recovery, Considerations in Anesthesia for, Radiologic Procedures like MRI, CT, Angiography Cardioversion, Emergency Room procedures, ECT

### 12. Day Care Surgery

#### Special Anesthesia Technique

- Hypotensive Anesthesia
- Use of Hypothermia

### **SECTION C: Critical Incidents, Crisis Management (topic to be discuss in the morning meeting and presented as incident report)**

- ▶ Hypertension, Hypotension
- ▶ Dysrhythmias, Heart Blocks, Cardiac Arrest
- ▶ Myocardial Ischemia
- ▶ Hypoxia, Hypo and Hypercapnia
- ▶ Airway Obstruction
- ▶ Laryngospasm, Bronchospasm
- ▶ Pulmonary Odema
- ▶ Pulmonary Aspiration
- ▶ Pneumothorax
- ▶ CICV
- ▶ Pulmonary Embolism
- ▶ Air Embolism
- ▶ Over dosage
- ▶ Delayed Recovery
- ▶ Sux. Apnea
- ▶ Dual Block
- ▶ Awareness
- ▶ Nerve Injuries

## **SECTION D: RESUSCITATION & TRAUMA MEDICINE**

### **Learning through workshops**

- Adult Resuscitation - BLS & ACLS
- Neonatal Resuscitation BLS
- PALS - Basics only
- Advanced Trauma Life Support
- Principles of Triage & Trauma Scoring
- Principles of Damage Control Surgery
- Principles of Fluid Resuscitation in Trauma
- All Resuscitative Fluids, Devices & Equipment.
  
- Blunt and Penetrating Trauma
- Airway Trauma
- Head and Spinal Trauma
- Thoracic Trauma
- Abdominal Trauma
- Trauma of other Body Parts

## **SECTION E: CRITICAL CARE MANAGEMENT**

### **1. Clinical Management**

- Admission & Discharge Criteria.
- Critical Care Management of Tetanus, G.B, Sepsis, Shock, MODS, Head trauma, Poly trauma, Obstetric cases, DKA, Massive hemorrhage, Status asthmatics, Status Epilepticus, Acute Renal Failure, Acute Hepatic Failure,
- Systemic support of all systems required by a critically ill patient (e.g.) Cardiac, Renal, Hematologic,
- Nutritional
- Respiratory failure and respiratory support including all forms of Oxygen-therapy and devices and ventilator parameters, modes of ventilations.
- Brain Death & Vegetative States Diagnosis, Decisions and Orders eg DNR Code Status.
- Poisoning and Envenomation
- General nursing care & Infection Control Antibiotic policy
- Analgesia and Sedation
- Scoring system APACHE, SOFA etc.
- Concept and Implementation of Bundle Therapy

### **2. Administrative**

- Organization and setting up an ICU
- Staffing, Equipment and Environment
- Admission and Discharge Policies

- Development of protocols and guidelines (e.g.) DNR, Organ Donation etc. 36
- Documentation and Record Keeping
- Communication and Counseling
- Ethical Approval of Research Protocols
- Funding, Data Collection and Statistical Analgesia
- Medico-legal Aspects

## **SECTION F: STATISTICS AND RESEARCH METHODS**

- Statistics
- Definitions: mean, mode, median, standard deviation  
Tests: one and two sample tests, multiple sample tests, contingency tables and Chi2 analysis, linear regression and correlation
- Concepts: sensitivity, specificity, incidence, prevalence, positive predictive value, negative predictive value, odds ratio, sample size analysis
- Experimental Designs: Prospective, Retrospective, Randomization, Protocol development
- Writing a paper
- Critical Appraisal
- Reading the Literature

**Studying a study:** how to determine if a study is valid, peer reviewed, relevance of topic, study design, statistical analysis, and types of statistical error.

Appropriate application of literature to clinical practice. Use of Medline and other information sources.

Research Ethics

Communication and counseling skills

## **ASA I-V, Elective & Emergency in Minor, Moderate and Major Surgeries**

- History taking, Physical Examination, Interpretation of Investigations,
- Management of Concurrent illness and Pre-op medications, & preparation
- Decisions making on referral / consult
- Risk assessment,
- Anesthesia Plan & Administration of Anesthesia
- Recovery and Post-op Care
- Crisis Management & Resuscitation
- Documentation of Record

**Procedures;****Airway Management of ASA I-V, Elective / Emergency in all major / complicated surgeries.**

Endotracheal Intubation,

Mallampati I & IV

Cricothyroidotomy

Percutaneous Dilatational Tracheostomy

Video Assisted Intubation

Bronchoscopy

Thoracotomy

**Regional Techniques**

Sub-arachnoid Block

Epidural / Caudal

    Combined Spinal Epidural

Brachial Plexus

Wrist Block

    Intercostal Block

TAP Block

    Sciatic Block

Three in One Block

Biers Block

Ankle Block

Wrist Block

**Use of Monitors and interpretation of information**

i. CNS monitoring

    Evoked Potentials

    BIS

    CFAM (Cerebral Function Analysis Monitor)

- ii. PNS monitoring  
Nerve Stimulator / Locator
- iii. Respiratory Monitoring  
Oximetry - All forms Capnography  
Flow-Volume loops, Compliance graphs, Airway Pressure  
Arterial Blood Gases  
Pulmonary Function Tests
- iv. Cardio- Vascular Monitoring  
Blood Pressure  
Non Invasive / Invasive  
ECG  
Echocardiography, TEE  
Cardio Output & Derived Indices
- v. Hematologic, Hepatic,  
Renal Systems and
- vi. ABG

## ICU SKILLS

1. Ventilator support  
Variables and modes
2. Choice of Sedation & Analgesia
3. Cardio-Vascular Support with correct choice of drugs and infusion devices
4. Renal Support
  - i. Drugs
  - ii. Dialysis
5. Hematologic support
  - i. Fluids, Blood and Blood Products
6. Nutritional support
  - i. Delivery Devices
  - ii. Choice of Enteral / Parenteral
  - iii. Calculation of Nutritional requirements
7. Physiotherapy
8. Infection Control and Barrier Nursing
9. Choice of Antibiotics
10. Implementation of "Bundle therapy"
  - i. Central line Bundle 4
  - ii. Ventilator Bundle 4
  - iii. Sepsis Resuscitation Bundle 4
  - iv. Sepsis Management Bundle

# **ENTRY CRITERIA**

## Eligibility to apply for MD Anesthesiology

- Candidate must possess MBBS or equivalent degree and one year house job from PMC recognized Institutions.
- Permanent valid registration with PMC.
- Declared successful in MD Part-I for University programs.
- In case of foreign candidate, valid registration with Medical Council of their country of origin must be produced.

## Required Documents

Attested photocopies of the following documents must be attached with application form:

- Computerized National Identity Card (CNIC)
- Domicile certificate
- Matric/O Level, FSc/A Level, Certificates or equivalent
- MBBS degree with detail marks certificates of all professional
- MBBS Attempts certificates of all professional
- NEB pass certificate (for foreign graduates)
- House Job certificates
- PMC valid permanent registration certificate
- MD Part-I passing certificate
- Experience Certificates (if any)
- Migration Certificate, if applicable (To be produced at the time of admission)

## Admission Procedure

- Details of admission procedure is available on university website at <http://www.szabmu.edu.pk/admission/postgraduate-admission>



# **ASSESSMENT**

- Assessment of trainees will cover the cognitive, psychomotor and affective domains. It will take two forms

Formative Assessment

Summative Assessment

### **Formative Assessment**

- It is the continuous assessment of progress and competence. It will be conducted through workplace based assessment throughout the training.
- Assessment will be undertaken by a range of assessors and will cover a range of procedures appropriate to the stage of training. Formative assessment will include
  - Directly observed practical skills (DOPS)
  - Case based discussion (CBD)
  - Mini clinical examination exercises (Mini-CEX)
  - Multiple source feedback (MSF)

### **Summative Assessment**

- Summative assessment will be held twice
  - Mid Term Assessment (MTA) Examination (At the end of 2nd year)
  - Final/Exit Examination (At the end of Final Year)
- The level of performance required for passing the exam will depend on the knowledge and skills necessary for acceptable performance and will not be adjusted to regulate the number or proportion of persons passing the examination. The pass point will be determined by careful analysis and judgment of acceptable performance.

### **Record of Clinical Cases**

- The trainees will be required to keep a record of the allocated clinical work in a log book. It will be the responsibility of trainee to keep the log book up to date with the signature of the faculty certifying the work.

# **TABLE OF SPECIFICATION FOR EXAMINATIONS**

## TABLE OF SPECIFICATION

Table of specification for Mid Term Assessment (MTA) and Final (Exit) Examination is here as under

### Midterm Examination

1. All candidates admitted in MD Anesthesiology courses can appear in MTA examination at the end of 2<sup>ND</sup> calendar year.
2. The examination shall be held on annual basis.
3. The candidate who fails to pass the examination in 3 consecutive attempts availed or un-availed, shall be dropped from the course.
4. The examination shall have two components:
  - Paper-I MCQs 100 Marks
  - Paper-II MCQs 100 Marks
5. Subjects to be examined shall be Basic Sciences relevant to Anesthesiology (Anatomy, Physiology, Biochemistry, Pathology, and Pharmacology), Physics & Equipment, Behavioral Sciences and Biostatistics & Research Methodology.
5. To be eligible to appear in MTA examination the candidate must submit;
  - i. duly filled, prescribed Admission Form to the Controller of Examinations duly recommended by the Principal/Head of the Institution in which he/she is enrolled;
  - ii. A certificate by the Principal/Head of the Institution, that the candidate has attended at least 75% of the lectures, seminars, practical/clinical demonstrations;
  - iii. Examination fee as prescribed by the University
7. To be declared successful in Part-I examination the candidate must secure 60% marks in each paper.

### FINAL Exit Examination

Paper-1	MCQs one best	100marks
Paper-2	MCQs	100 marks
<b>a. Practical:</b>		
OSCE		50marks
Long case		100marks
Viva		100marks
Log book		50marks

Total: 500marks

b. **Thesis** 100marks

C.

2. To be eligible to appear in the examination the candidate must submit:

- a. Duly filled prescribe admission form to the controller of examination.
- b. Certificate of the attendance by supervisors/chairman of the department .That the candidate has attended at least 75% of lectures and practical/ clinical rotations.
- c. Examination fee as prescribe by the university.
- d. To be declared successful in examination the must secure 60% marks in each semester
- e. Logbook/assignment: throughout the length of course the performance of the candidates shall be recorded on the log book.

- The supervisor shall certify every semester that the log book is being maintained and signed regularly.
- The log book will be developed and approved by the advanced studies and research board.
- The log book will reflect semester wise competence of skills, assignments/ journal club/ presentations made by the candidates.

### **Submission/ Evaluation of Synopsis**

1. The candidates shall prepare their synopsis as per guidelines provided by the Advanced Studies & Research Board, available on SZABMU website.
2. The research topic in clinical subject should have 30% component related to basic sciences and 70% component related to applied clinical sciences. Their search topic must consist of a reasonable sample size and sufficient numbers of variables to give training to the candidate to conduct research, to collect & analyze the data.
3. Synopsis of research project shall be submitted by the end of the 6<sup>th</sup> semester of MD program. The synopsis after review by an Institutional Review Committee shall be submitted to the University for Consideration by the Advanced Studies & Research Board, through the Principal /Dean /Head of the institution.

### **4. Submission of Thesis**

1. The synopsis shall be submitted by the candidate duly recommended by the Supervisor.
2. The minimum duration between approval of synopsis and submission of the thesis shall be one year, but the thesis cannot be submitted later than 6 years of enrolment.
3. The research thesis must be compiled and bound in accordance with the Thesis Format Guidelines approved by the University and available on website.
4. The research thesis will be submitted along with the fee prescribed by the University.



### **5. Thesis Examination**

- ~~1. All candidates admitted in MD courses shall appear in the final semester~~  
Examination at the end of 4 year of their training course.
2. Only those candidates shall be eligible for the evaluation who have passed previous semesters examinations.
3. The examination shall include clinical component and thesis evaluation with defense.
4. The Vice Chancellor shall appoint three external examiners for thesis evaluation, preferably from other universities or from abroad, out of the panel of examiners approved by the Advanced Studies & Research Board. The examiners shall be appointed from respective specialty.
5. The thesis shall be sent to the external examiners for evaluation, well in time before the date of defense examination and should be approved by all the examiners.
6. After the approval of thesis by the evaluators, the thesis defense examination shall be held within the University on such date as may be notified by the Controller of Examinations. The Controller of Examinations shall make appropriate arrangements for the conduct of thesis defense examination in consultation with the supervisor, who will co-ordinate the defense examination.
7. The thesis defense examination shall be conducted by two External Examiners who shall submit a report on the suitability of the candidate for the award of degree. The supervisor shall act as coordinator.



## **Award of MD Anesthesiology Degree**

After successful completion of the structured courses of MD Anesthesiology and qualify in all semester examinations- the degree with title MD Anesthesiology shall be awarded.

Final transcript for the award of the degree will be issued from the examination department as per guidelines of Higher education commission of Pakistan.







# LEARNING RESOURCES

## RECOMMENDED BOOKS

1. Aitken head A. R., Smith G., Row Botham D. J. **Textbook of Anesthesia.** 5<sup>th</sup> ed. Churchill Livingstone
2. Morgan G. E., Mikail M. S., Murray M. J. **Clinical Anesthesiology.** 4<sup>th</sup> ed. Lange
3. Yao and Artois's. **Anesthesiology: Problem oriented Patient Management** 5<sup>th</sup> ed. Lippincott Williams and Walking
4. David P. D. and Kenny G. N. C. **Basic Physics and Measurement in Anesthesia.** 5<sup>th</sup> ed. Butterworth Heinemann
5. Rana M. H., Ali S. Mustafa M. **A Handnook of Behavioral Sciences for Medical and Dental Students.** Lahore: University of Health Science; 2007.
6. Fathalla M. F. and Fathalla M. M. F. **A Practical Guide for Health Researcher.** Cairo: World Health Organization; 2004.

## RECOMMENDED JOURNALS

1. British Journal of Anesthesiology
2. Anesthesia (British Journal)
3. Anesthesia and Analgesia (American Journal)
4. Anesthesia and Critical Care (British Journal)



# PROGRAM EVALUATION



# SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY

## PROGRAM EVALUATION

The program director will continue to ensure that the program is fit for purpose in that it provides the trainee with the appropriate knowledge, skills, attitudes and competencies required to meet the requirements of a specialist.

Program evaluation will be carried out after every two years according to the CIPP model of evaluation. Any suggested updates will only be made following appropriate consultation with stakeholders, including trainees and lay members.

Feedback forms are attached as "Annexure A"





## **ANNEXURE A**

### **Supervisor Evaluation Form**

Date: \_\_\_\_\_ Supervisor’s Name: \_\_\_\_\_

Your Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Evaluations of supervisors by trainees are an important process for providing supervisors with an assessment of the quality of their work. Annual supervisor assessments can be used to compliment a supervisor for doing a good job. Annual assessments can also identify areas for improvement. Evaluations can strengthen communications between supervisors and trainees.

Trainees have three options for evaluating supervisors:

- 1) Completing the Evaluation of Supervisor form.
- 2) Writing a signed memo evaluating the supervisor.
- 3) Meeting with the supervisor’s department head.

Evaluations received by the deadline (January 15) will be incorporated into the annual review of the supervisor. Forms and/or signed memos should be sent to the Human Resources department.

\* \* \*

(E=Excellent, G=Good, S=Satisfactory, N=Needs Work, U=Unsatisfactory, Ø=No Opinion)

#### **Performs Supervisory Functions**

Provides on-going positive and negative feedback	E	G	S	N	U	Ø
Makes expectations known	E	G	S	N	U	Ø
Is tactful and considerate	E	G	S	N	U	Ø
Promotes teamwork and good working relationships	E	G	S	N	U	Ø
Recognizes and addresses concerns in a timely manner	E	G	S	N	U	Ø
Delegates authority appropriately	E	G	S	N	U	Ø
Provides training of new employees	E	G	S	N	U	Ø



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Provides direction of work	E	G	S	N	U	Ø
Communicates openly and honestly with peers, staff and administration	E	G	S	N	U	Ø

**Comments:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## Develops Innovative Procedures

Is receptive to new ideas	E	G	S	N	U	Ø
Is receptive to questions	E	G	S	N	U	Ø
Encourages initiative and innovation	E	G	S	N	U	Ø

**Comments:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## III. Maintains a positive work environment

Recognizes contributions	E	G	S	N	U	Ø
Motivates workers	E	G	S	N	U	Ø



# SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY

Provides relaxed yet efficient work atmosphere	E	G	S	N	U	Ø
Encourages staff development	E	G	S	N	U	Ø

**Comments:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## Knows the Operations of the Department

Understands employee workload	E	G	S	N	U	Ø
Is alert to potential problems	E	G	S	N	U	Ø
Keeps staff informed about department and university developments	E	G	S	N	U	Ø

**Comments:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## Work Habits

Acknowledges own limitations and mistakes	E	G	S	N	U	Ø
Maintains a positive work attitude	E	G	S	N	U	Ø
Uses time efficiently and effectively	E	G	S	N	U	Ø



# SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY

Demonstrates a good work ethic	E	G	S	N	U	Ø
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Comments: \_\_\_\_\_

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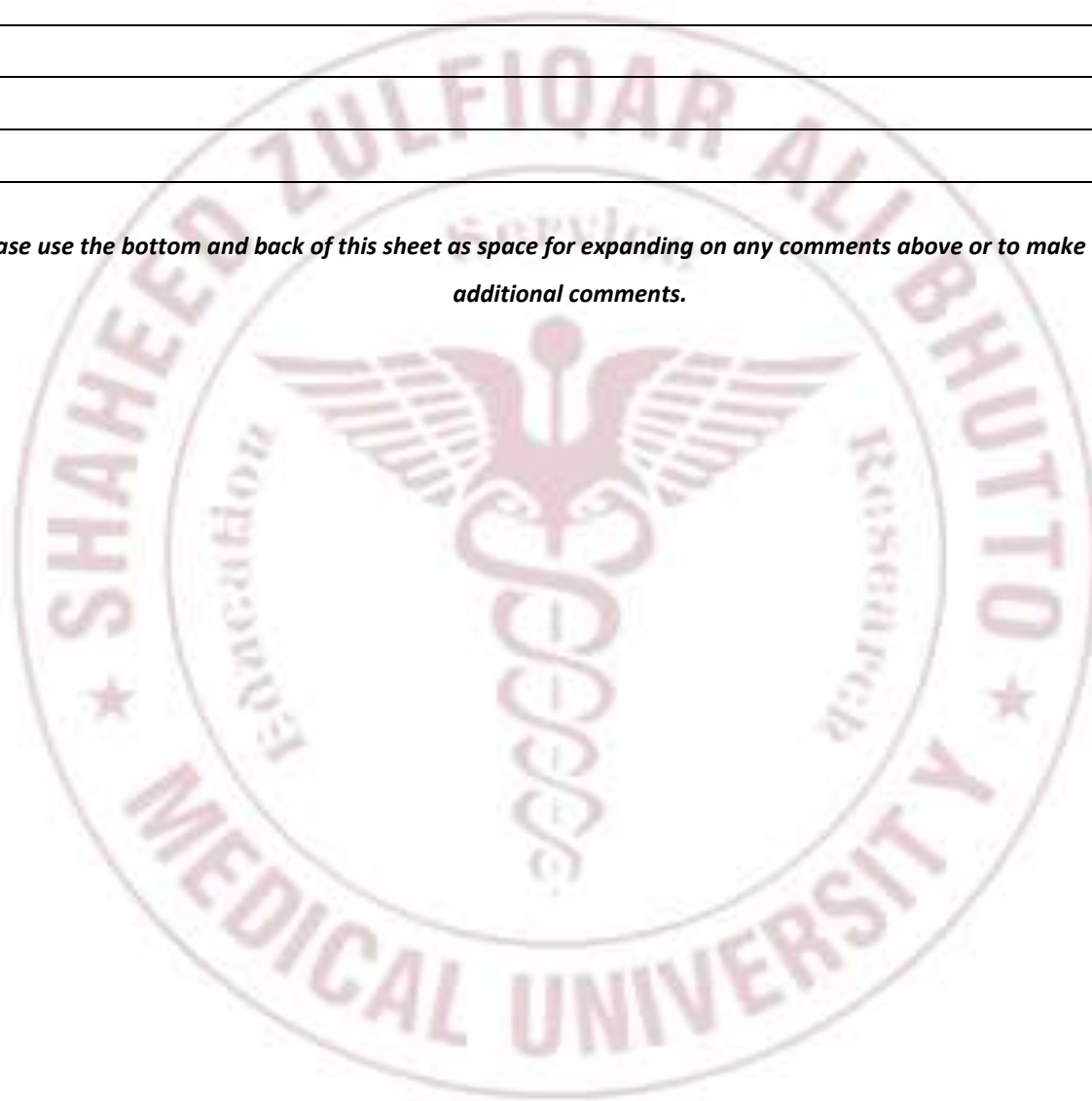
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*Please use the bottom and back of this sheet as space for expanding on any comments above or to make any additional comments.*





# SHAHEED ZULFIQAR ALI BHUTTO MEDICAL UNIVERSITY

## Program Evaluation Form

Please use the following scale to indicate your response to the statements below:

**SA** = strongly agree

**A** = agree

**N** = neither agree/disagree

**D** = disagree

**SD** = strongly disagree

The information was presented effectively	SA	A	N	D	SD
The information presented was practical	SA	A	N	D	SD
The program provided a good working knowledge of the subject matter presented	SA	A	N	D	SD
The program has allowed me to acquire practical skills and knowledge to manage my business more effectively and efficiently	SA	A	N	D	SD
The program attended was sufficient for my purpose	SA	A	N	D	SD