NISHTAR MEDICAL UNIVERSITY
MULTAN

2023

CURRICULUM

DIPLOMA IN ANAESTHESIA (D.A)-2 YEARS

FOREWORD

The government of the Punjab decided to establish a new medical college and hospital at Multan. On 31st December 1950, at a largely attended public meeting held at Lahnge Khan's Garden adjoining the Civil Hospital Multan, the Governor of the Punjab Sardar Abdur Rab Nishtar made the announcement of the decision by the government of Punjab to establish a medical college and hospital at Multan. It was named as **Nishtar Medical College and Hospital** to honor Sardar Abdur Rab Nishtar.

Nishtar Medical College was upgraded to Nishtar Medical University in May 2017 by ordinance by Governor of the Punjab. That was later on adopted as act on Sep, 2017.

The vision of Nishtar Medical University is to see as a modern, progressive, state of the art Medical institution where educational activities, research and clinical services will develop side by side in an environment of enviable institutional traditions, tolerance and courage to question, centered around a burning passion to ally the pain and sufferings of our people, to produce great scientific minds and to promote a culture of ethical and evidence based practice.

Our mission is to replace traditional public address type class lectures to problem oriented, student based, small group learning and a gradual shift to modular system., to develop a robust, transparent and reliable system of evaluation, to develop international collaboration with reputable universities , to develop a parallel program of sporting and extracurricular activities, to introduce best practice guidelines and a vigilant periodic surveillance system to meet the Minimum Service Delivery Standards (MDMS), two work towards a paper free hospital, to hire experts in research and medical education and to start a university medical journal.

My aim is to make it a state of the art medical university, capable of nurturing the undergraduate and post graduate students with quality teaching and training. It should be able to promote the culture of research and ethical orientation. It must inculcate the true sense of education into the students. However this aim challenges both students and faculty members to rise to their potentials, identify their strengths, and direct to acquire much-needed lifelong learning skills for academic and social pursuits. The ever-expanding faculty of Nishtar Medical University consists of scholars, professors and specialists, who are committed to the highest standards of teaching, training, research, and service delivery. All of us can lead this university into an era of innovation and cutting-edge scientific inquiry with a truly scientific, social, and economic impact.

This Document precisely briefs the details of newly started program at Nishtar medical university for Diploma in Anesthesiology as prepared by expert committee.
I hope this course will be able to meet the need of latest trend in anesthesiology will certainly produce competent mid-level specialist in the field, which is the main objective of this programme.

Prof. Dr. Rana Altaf Ahmed.
Vice Chancellor,
Nishtar Medical University, Multan

AIMS AND OBJECTIVES OF THE COURSE

AIM

The aim of 2 years diploma programme in Anaesthesiology is to equip medical graduates with relevant professional knowledge, skills and ethical values to enable them to apply their acquired expertise at primary and secondary health care organizations as non-academicconsultants.

OBJECTIVES

DA training should enable a student to:

1. Demonstrate comprehensive knowledge of General Medicine, General Surgery, Physiology, Pharmacology, physical properties of gases and working of vast array of anaesthetic equipment
2. Apply national and international guidelines to assess a patient
3. Satisfactorily addresses fears, concerns and expectations of the patients
4. Evaluate patients in the setting of outpatients department, hospital wards, labor room, emergency and operation theatre
5. Order a set of relevant investigations considering availability, diagnostic yield, cost-effectiveness, side effects, and implications for management
6. Take proper informed consent for physical examination and ensure confidentiality and appropriate environment for intimate physicalexamination
7. Counsel patients and relatives in patient's preferred language in elective and emergency situations in keeping principles of good communication skills, empathy and empowerment of patients
8. Exhibit emotional maturity and stability, integrity, ethical values and professional approach, sense of responsibility in day-to-day professional activities
9. Act as an independent specialist at community level/Tehsil and District Headquarter Hospital
10. Show initiative and become lifelong self-directed learners tapping on resources including clinical material, faculty, internet and on-line learning programs and library

SPECIFIC LEARNING OUTCOMES

Following competencies will be expected from a student completing 02years course in Anaesthesiology:

1. Discuss principles of basic sciences as applied to Anaesthesiologylike haemorrahage, blood transfusion, shock, sterilization of instruments, infection, antibiotics, inflammation, repair & healing
2. Able to procure informed consent in accordance with the guidelineset by PHC
3. Well-versed with triad of Anaesthesia i.e. hypnosis, analgesia andmuscle relaxation
4. Aware of his/her role as the one who not only ensures provision of ideal operating conditions for surgery, but also intensive care, resuscitation, alleviation of acute and chronic pain and anaesthesiafor diagnostic procedures
5. Is able to assess and balance the risks of anaesthesia
6. Is able to ensure that the patient is as fit as possible
7. Is able to decide on the type of anaesthesia and analgesia
8. Communicate effectively with patients about the intended surgical procedure, can rationally explain benefits vs. risk factors involved in both anaesthesia and the anticipated surgery
9. Is able to allay anxiety and pain

NOMENCLATURE AND DURATION

NOMENCLATURE OF THE PROPOSED COURSE:

The name of diploma course should be retained as DA. This name has been recognized and established for the last many decades worldwide.The duration of courses should be two years structured training in a recognized department under an approved supervisor.

Course Title: DA (Diploma in Anaesthesiology)

Training Centre: Departments of Anaesthesia & ICU
Nishtar Medical University,Multan

Course Duration and Scheme of the Course:

Total Duration 2 years structured training (6 months in Part I and one & a half year in Part II) in anesthesia department under theguidance of an approved supervisor

Part I- SIX MONTHS

Theoretical Component

1. Applied Anatomy
2. Applied Physiology
3. Pharmacology
4. General Pathology/ Applied Hematology
5. Physics & Anaesthetic Equipment
6. Monitoring Equipment
7. Biostatistics and research
8. Behavioural sciences
9. Resuscitations & crisis management.
10. Introduction of basic principles in anaesthesia
11. **Practical conduct of Anaesthesia**
    a. Preoperative assessment
    b. Clinical examination & recognition of medical diseases
    c. Premedication
    d. Induction of anaesthesia
    e. Airway maintenance
    f. Monitoring during anaesthesia
    g. Recovery from anaesthesia
    h. Post op problems and care

Part II- YEAR & a HALF

Theoretical Component

1. General surgical conditions and anaesthesia
2. Medical diseases and anaesthesia
3. Obstetrical and gynaecological anaesthesia
4. Neuro-anaesthesia
5. Paediatric anaesthesia
6. Urology anaesthesia
7. Day care anaesthesia
8. Eye & ENT anaesthesia
9. Trauma & orthopaedic anaesthesia
10. Post anaesthesia care and recovery
11. Crisis management
12. Cardiac arrest and resuscitation
13. Regional anaesthesia: Spinal and epidural, Intrathecal,Extremity blocks

14. Practical conduct of Anaesthesia

a. Preoperative assessment
b. Optimization of common medical diseases
c. Premedication
d. Induction of anaesthesia
e. Airway maintenance
f. Monitoring during anaesthesia
g. Recovery from anaesthesia
h. Post op problems and care

PROPOSED ROTATIONS

(The supervisors can these rotations according to their own circumstances)

YEAR I & II

General Surgery	6 months
Orthopaedics and trauma	4 months
Gynae. & Obs.	4 months
Urology	2 months
ENT	2 months
Eye	1 month
ICU & Post anaesthesia care unit	2 month
Neurosurgery	1 month
Paediatrics	1 month
Cardiothoracic	1 month
	24 months

ELIGIBILITY CRITERIA FOR ADMISSION

DOCUMENTS REQUIRED FOR THE ADMISSION

1. Completed DA application form
2. Copy of MBBS degree with mark sheets of professional examinations and certificate of number of attempts in professional examinations
3. Copy of PMC registration certificate
4. Three latest passport size photographs
5. Reference letters from two consultants, with whom the applicant has worked
6. Certificates of completion of required experience

GENERAL REQUIREMENTS

Candidates eligible for admission should have MBBS or equivalent qualification, registered with PMDC/PMC and fulfilling one of the following criteria:

One of the following:

a. One year experience in Anaesthesiology as House surgeon/Medical Officer

b. Six months in Medicine and allied & six months in Surgery and allied as House Officer/Medical Officer.

SPECIAL REQUIREMENTS

1. Obtaining pass percentage in the entry test as determined by the NMU

2. Qualifying the interview successfully

3. Having up to the mark credentials, determined by the NMU/UHS (no. of attempts in each professional, any gold medals or distinctions, relevant work experience, research experience from a recognized institution, any research article published in a National or an International Journal)

REGISTRATION AND ENROLLMENT

- Total number of students enrolled for course must not exceed 10 per unit NMU
- NMU will approve supervisors for diploma course
- Candidates selected for the courses will be registered with relevantsupervisors and enrolled with NMU Multan

RECOGNITION/EQUIVALENCE OF THE DEGREE ANDINSTITUTION

After two years training course, candidate should be given status of amid-level specialist equivalent to any other similar qualification.

Accreditation related issues of the institution:

1. **Faculty**
   Properly qualified teaching staff in accordance with the requirements of Pakistan Medical Commission **(PMC)**

2. **Adequate Space**
   Including class-rooms (with audiovisual aids), computer lab

3. **Library**
   Departmental library should have latest editions of recommended books for DA, reference books and latest journals (two national and one international)

CONTENT OUTLINE

PART I DA

APPLIED ANATOMY: Relevant to Anaesthesiology.

Nervous System (central and peripheral)
Brain and spinal cord, cranial nerves (in particular 5, 7, 10)Cerebral Circulation
CSF formation and flow
Vertebral column, spinal and epidural spacesDermatomes of body
Nerve supply upper and lower limbs, thorax, abdomen and perineumPain Pathways
Autonomic Nervous System
Detailed anatomy of sympathetic and parasympathetic nervoussystem
Head and Neck
Mouth, pharynx, Great vessels neck and thorax, Thoracic inlet,intercostals spaces, Thyroid gland
Respiratory System
Nose, Larynx, trachea and bronchial tree, lungs, pleura,Mediastinum, muscles of respiration, diaphragm **Cardiovascular System**
Heart, coronary circulation, conduction system, Blood supply of upper and lower limbs and other relevant organ systems of the body.

APPLIED PHYSIOLOGY:

Nervous System

1. Neuromuscular physiology
2. Nervous system: structure and formation of brain and spinal cord, physiology of sensation, neuromuscular transmission, synaptic transmission, cerebrospinal fluid.
3. Autonomic nervous system
4. Pain pathways
5. Stress response

Respiratory System

1. Control of Respiration
2. Mechanics of Respiration
3. Gas Exchange
4. 0_2 & $C0_2$ Transport
5. Acid-Base Balance

Cardio-Vascular System

1. Origin and Conduction of Cardiac Impulse
2. Cardiac Cycle
3. Coronary Circulation
4. Regulation of Blood Pressure
5. Regulation of Cardiac Output
6. Control of Blood Flow through Organs

Haematology

1. Physiology pertinent to anaemias
2. Physiology of Haemostasis & coagulation
3. Blood and Blood Components
4. Blood & Blood groups

Gastrointestinal System1.Nausea & vomiting 2.Hepatic physiology

Renal System

1. Body Compartments, Body fluids, electrolytes balance
2. Renal Blood Flow Regulation
3. Glomerular Filteration,Tubular Functions, formation of urine,
4. Renal Control of Acid/Base Balance
5. Renal failure

Maternal and Neonatal Physiology

1. Physiology of Pregnancy
2. Placental Physiology
3. Foetal Physiology of Circulation
4. Neonatal Physiology and APGAR Scoring

Endocrine system

Pituitary, adrenals, thyroid & parathyroid, Insulin secretion

Physiology of Temperature Regulation

PHARMACOLOGY

A) Principles of General Pharmacology

B) Special pharmacology

General Anaesthetics

1. Intravenous induction agents
2. Inhalation agents: Nitrous oxide, halothane, Isoflurane,desflurane, Sevoflurane
3. Local anaesthetics

Sedatives

1. Benzodiazepines
2. Butyrophenones
3. ALPHA Adrenergic Agonists
4. Clonidine, Dexmetatomidine
5. Phenothiazines

Analgesics

Analgesics: Simple analgesics, NSAIDs, Opiates

Muscle Relaxants

Depolarizing & non-depolarizing, reversal agentsAnti-Cholinergics

a) Atropine
b) Glycopyrolate

Medical Gases

c) Oxygen
d) Nitrousoxide
e) Operation theatre environment and recovery area humidity
f) Entonox
g) Co_2
h) Medical Air Inotropes

and vasopressorsBeta blockers
Antihypertensive agents, vasodilators
Antiarrhythmic drugs
Diuretics
Insulin and Oral Hypoglycaemics
Antiemetics
Anti-Histaminics
Antacids
Corticosteroids
Diuretics
Crystalloids and colloids

GENERAL PATHOLOGY/ APPLIED HEMATOLOGY

1. General Pathology

Cell Injury and adaptation

Cell Injury

- Reversible and Irreversible Injury
- Fatty change, Pigmentation, Pathologic calcification
- Necrosis and Gangrene

Cellular adaptation

- Atrophy, Hypertrophy,
- Hyperplasia, Metaplasia, Aplasia

Inflammation

- **Acute inflammation** --- Vascular changes, Chemotaxis,Opsonization and Phagocytosis
- Enlist the cellular components and chemical mediators ofacute inflammation
- Differentiate between exudates and transudate
- **Chronic inflammation**
- Etiological factors, Granuloma

Cell repair and wound healing

- Regeneration and Repair
- Healing--- steps of wound healing by first and secondintention
- Factors affecting healing
- Enlist the complications of wound healing

Haemodynamic disorders

- Define and classify the terms Edema, Haemorrhage,Thrombosis, Embolism, Infarction & Hyperaemia
- Define and classify Shock with causes of each.
- Describe the compensatory mechanisms involved in shock
- Describe the pathogenesis and possible consequences ofthrombosis
- Describe the difference between arterial and venousemboli

Neoplasia

- Dysplasia and Neoplasia
- Differences between benign and malignant neoplasms
- Enlist the common etiological factors for neoplasia
- Define and discuss the different modes of metastasis
- TNM staging system and tumor grade

Immunity and Hypersensitivity

Urinary system: Effect of injury and disease

Respiration: disturbance resulting from injury orDisease (Asthma, emphysema, Bronchitis)

2. Applied Hematology

- Blood Transfusion
- Cross matching techniques
- Infections and blood transfusions.
- Blood and Blood Component Therapy
- Complications of blood transfusion Salient

pathophysiological and clinical Features Of:

- Different types of anemias
- Immune hemolytic anemias.
- Clotting and bleeding abnormalities
- Acute / Chronic leukemias

PHYSICS AND EQUIPMENT

1. Basic Definitions
   For example Vapour Pressure, Critical Pressure, CriticalTemperature, Boiling Point, Thermal Conductivity
2. Basic laws of physics applicable to Anaesthesia
3. Operation theatre environment and recovery area
   For instance, humidity, temperature, light, electrical safety,pollution, infection, post-anaesthesia care unit (PACU)
4. Medical gas supply system VIE (Visual Information Engineering),manifolds, cylinders, regulation
5. Anaesthesia machines, machine check, safety feature, flow meters,vaporizers, pressure relief valves
6. Delivery system / Breathing systems
   Mapelsons circuits, circle absorber
7. Ventilation
   Basic principles of minutes' volume dividers,(Pressure generator, flow generation)
8. Scavenging System
9. Anaesthesia Sundries
   Largyngoscopes, guedel airways, face masks, laryngealmask airways, endotracheal tubes, bougies, stilettos, connectors
10. Monitoring
    a. Standards / Principles of monitoring
    b. Record Keeping
    c. Critical Incident Monitoring
    d. Principles of Oximetry
    e. Principles of Capnography
    f. Electrocardiography

g. Temperature Monitoring
h. Neuromuscular Monitoring
1. Blood Pressure Monitoring, Non-Invasive and Invasive
j. Blood Loss
k. Airways Pressures / Spirometry
l. Cerebral Function Analysis Monitor

BEHAVIOURAL SCIENCES

a. Bio-Psycho-Social (BPS) Model of Health Care
b. Use of Non-medicinal Interventions in ClinicalPractice
    - Communication Skills
    - Counselling
    - Informational Skills
c. Crisis Intervention/Disaster Management
d. Conflict Resolution
e. Breaking Bad News
f. Medical ethics, Professionalism and Doctor-Patient Relationship
    - Hippocratic Oath
    - Four Pillars of Medical Ethics (Autonomy, Beneficence, Non-malficence and Justice)
    - Informed Consent and Confidentiality
    - Ethical Dilemmas in a Doctor's Life
g. Delivery of Culturally Relevant care and Cultural Sensitivity

h. Psychological aspects of health and Disease
    - Psychological Aspect of Health
    - Psychological Aspect of Disease
    - Stress and its management
    - Psychological aspect of Pain
    - Psychological Aspect of Aging

BIOSTATISTICS AND RESEARCH

a. Introduction to Bio-Statistics
b. Introduction to Bio- Medical Research
c. Why research is important?
d. What research to do?
    - Selecting a Field for Research
    - Drivers for Health Research
    - Participation in National and InternationalResearch

- Participation in Pharmaceutical Company Research
- Where do Research Ideas come from
- Criteria for a good research topic

e. Ethics in Health Research
f. Writing a Scientific Paper
g. Making a Scientific Presentation
h. Searching the Literature

PART II DA

CLINICAL ANAESTHESIA

In the 2nd year of DA, knowledge base of general and regionalanaesthesia in the following disciplines will be required:

1. General Surgery
2. Obstetrics and Gynaecological Surgery
3. Paediatric Surgery
4. Neuro Surgery
5. Opthalmic Surgery
6. Ear, Nose and Throat Surgery
7. Urological Surgery
8. Day Care Surgery
9. Basic Principles of Thoracic Anaesthesia
10. Inter-current medical diseases and Anaesthesia
11. Emergency / Trauma / Orthopaedic Surgery
12. Resuscitation
13. Acute post-operative pain
14. Post-anaesthesia care and recovery
15. Intra-thecal Anaesthesia
16. Pre-operative Assessment

METHODS OF INSTRUCTION/COURSE CONDUCTION

As a policy, active participation of students at all levels will be encouraged.
Following teaching modalities will be employed:

1. Lectures
2. Seminar Presentation and Journal Club Presentations
3. Group Discussions
4. Grand Rounds
5. Clinico-pathological conferences
6. SEQ as assignments on the content areas
7. Skill teaching in operating theatres
8. Self study, assignments and use of internet
9. Bedside teaching rounds in ward
10. Long and short case presentations

In addition to the conventional teaching methodologies following interactive strategies will also be introduced to improve both communication and clinical skills in the upcoming mid-level consultants:

1.1. Monthly Student Meetings

With DA students will be conducted on monthly basis meetings/discussions

a. Journal Club Meeting
b. Core Curriculum Meetings
c. Skill Development

a. Journal Club Meeting

Two hours per month will be allocated to the presentation and discussion of a recent Journal article related to Anaesthesiology. The article critically evaluated and its applicable results will be highlighted, which can be incorporated in clinical practice. Record ofall such articles should be maintained.

b. Core Curriculum Meetings

All the core topics of DA will be thoroughly discussed during these sessions. The duration of each session will be at least two hours

once a month. It will be chaired by the chief student (elected bythe students of the relevant diploma). Each student should be given an opportunity to brainstorm all topics included in the course and to generate new ideas regarding the improvement of the course structure.

c. Skill Development

Two hours twice a month will be assigned for learning and practicing clinical skills.

List of skills to be learnt during these sessions is as follows:

1. Communication skills
2. Interpretation of radiographs, interpretation of ECG, interpretationof ABGs, interpretation of lab investigations
3. Practical skills i.e. use of relevant clinical instruments
4. Presentation skills: Power point, lectures, small group discussions,article presentation etc.
5. Research and scientific writing
6. For acquisition of procedural skills like I/V cannulation, airway management, sub-arachnoid block, caudal block, I/V regional anaesthesia (Bier's Block) opportunities during ward rotations should be availed

1.2 Annual Grand Meeting

Once a year all students for DA will be invited to the annual meeting.

One full day will be allocated to this event. All the chief students will present their annual reports. Issues and concerns related to their diploma course will be discussed. Feedback will be collected and also suggestions will be sought in order to involve students in decision making. The research work and their literary work can be displayed.
In the evening an informal gathering and dinner may be arranged. This will help in creating a sense of belonging and ownership among students and the faculty.

LOG BOOK

The trainees must maintain a log book and get it signed regularly by the supervisor. A complete and duly certified log book will be partof the requirement to sit for the DA examination. Log book will include adequate number of anaesthetic procedures, routine and emergency management of patients, case presentations in CPCs, journal club meetings and literature review.

Proposed Format of Log Book is as follows:

Candidate's Name: _____

Roll No. _____

PROCEDURES:

- I/V cannulation
- Airway management (intubation technique)
- Infiltration
- Nerve blocks
- Femoral nerve block
- Spinal aneasethesia
- Epidural anaesthesia
- Sub-arachnoid block
- I/V regional anaesthesia (Bier's Block)
- Intra-thecal anaesthesia
- Thoracic anaesthesia
- Caudal block
- Resuscitation

Sr.#	Date	Name of Patient,Age, Sex & Admission No.	Diagnosis	Procedure Performed	Supervisor's Signature
1					
2					

Emergencies Handled

Sr. #	Date	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedure /Management	Supervisor's Signature
1					
2					

Case Presented

Sr.#	Date	Name of Patient, Age, Sex & Admission No.	Case Presented	Supervisor's Signature
1				
2				

Seminar/Journal Club Presentation

Sr.#	Date	Topic	Supervisor's signature
1			
2			

Evaluation Record
(Excellent, Good, Adequate, Inadequate, Poor)

Sr.#	Date	Method of Evaluation (Oral, Practical, Theory)	Rating	Supervisor's Signature
1				
2				

LITERATURE REVIEW

Students will be assigned a clinical problem most commonly encountered in the relevant specialty and will be specifically trained to review literature in the relevant field and write a **'Review of an Article'** comprising of:

- Topic
- Introduction
- Discussion of the reviewed literature
- Conclusion
- References

EXAMINATIONS

Assessment

It will consist of action and professional growth oriented ***student- centered integrated assessment*** with an additional component of ***informal internal assessment, formative assessment*** and measurement-based ***summative assessment*.**

Student-Centered Integrated Assessment

It views students as decision-makers in need of information about their own performance. Integrated Assessment is meant to give students responsibility for deciding what to evaluate, as well as how to evaluate it, encourages students to **'own'** the evaluation and to use it as a basis for self-improvement. Therefore, it tends to be growth- oriented, student-controlled, collaborative, dynamic, contextualized, informal, flexible and action-oriented.

In the proposed curriculum, it will be based on:

- Self Assessment by the student
- Peer Assessment
- Informal Internal Assessment by the Faculty

Self Assessment by the Student

Each student will be provided with a pre-designed self-assessment form to evaluate his/her level of comfort and competency in dealing with different relevant clinical situations. It will be the responsibility of the student to correctly identify his/her areas of weakness and to take appropriate measures to address those weaknesses.

Peer Assessment

The students will also be expected to evaluate their peers after the monthly small group meeting. These should be followed by a constructive feedback according to the prescribed guidelines and should be non-judgmental in nature. This will enable students tobecome good mentors in future.

Informal Internal Assessment by the Faculty

There will be no formal allocation of marks for the component of Internal Assessment so that students are willing to confront theirweaknesses rather than hiding them from their instructors.

It will include:

a. Punctuality
b. Ward work
c. Monthly assessment (written tests to indicate particulararеas of weaknesses)
d. Participation in interactive sessions

Formative Assessment

Will help to improve the existing instructional methods and the curriculum in use

Feedback to the faculty by the students:

After every three months students will be providing a written feedback regarding their course components and teaching methods. This will help to identify strengths and weaknesses of the relevant course, faculty members and to ascertain areas for further improvement.

Summative Assessment

It will be carried out at the end of the programme to empirically evaluate **cognitive, psychomotor** and **affective domains** in order to award diplomas for successful completion of courses.

Eligibility to Appear in Final Examination

- Only those candidates will be eligible to take final examination, who have passed Part 1 examination (after 6 months of education) and have completed two years of structured/supervised training programme.
- Only those candidates who have completed their log books and hold certificates of 75% attendance should be allowed to sit for the exam
- Application for the final examination will be submitted with supervisor's recommendation
- Only those candidates who qualify in theory will be called for clinical examination

DA Examination Part I DA

The examination will be held after completion of 9 months of education.

Topics included in paper 1

- Anatomy (17 MCQ)
- Physiology (25 MCQ)
- Principles of Pharmacology and Therapeutics (25 MCQ)
- General Pathology/ Applied Hematology (10 MCQ)
- Physics and Equipment (13 MCQ)
- Behavioural Sciences (05 MCQ)
- Introduction to Biostatistics and Research (05 MCQ)

Components of the Part 1 examination

MCQ Paper	100	One Best Type
Total Marks	100	Marks

Part II DA

Topics included in paper 1

Clinical Anaesthesia

1. Day Care Surgery
2. Inter-Current Medical Diseases andAnaesthesia
3. Emergency/ Trauma/ Orthopedic Surgery
4. Resuscitation
5. Acute Post-Operative Pain
6. Post- Anaesthesia Care and Recovery
7. Intra-Thecal Anaesthesia
8. Pre-Op Assessment

Topics included in paper 2

Clinical Anaesthesia

1. General Surgery
2. Obstetrics and Gynaecological Surgery
3. Paediatric Surgery
4. Basic Principles of Thoracic Anaesthesia
5. Neuro Surgery
6. Ophthalmic Surgery
7. ENT Surgery
8. Urological Surgery

Part II Examination

1. Theory

Paper I	**100 Marks**	**3 Hours**
05 SEQs (No Choice)	50 Marks	
50 MCQs	50 Marks	

Paper II	**100 Marks**	**3 Hours**
05 SEQs (No Choice)50	50 Marks	
MCQs	50 Marks	

Note: The candidates who pass in theory papers, will be eligible to appear inthe clinical & viva voce.

2. OSCE **90 Marks**

Total Station:	**10 (Each 9 Marks)**
Interactive:	05
Static:	05

Note: Each station has 06 minutes and one minute for switch over.

Total 07 minutes.

3. Clinical **90 Marks**

Short Cases	Four (15 Marks each)
Long Cases	One (30 Marks)

Four short cases each carrying 15 marks and one long case of 30 marks.

Components of the Part II examination

Theory paper 1	100 marks
Theory paper 2	100 marks
Clinical/Oral	180 marks
Internal Assessment/Log Book	20 marks
Total Marks	400

A panel of four examiners from Anaesthesia Department (Two internal and two external) will be appointed for practical examination.

Each component of practical examination will be assessed by two examiners awarding marks simultaneously and independently. Thefinal score awarded will be an average score, as agreed by bothexaminers.

Pass Percentage and other Regulations Regarding Examination

- Criterion referenced assessment principles will be used
- 20 marks for the log book will be included in the OSCEcomponent
- 60 % marks will be a pass score in each component
- Candidates failing in any one component will have to re-sit the entire examination
- A maximum of 5 attempts to sit for the examination will be allowed, to be availed within 3 calendar years of the first attempt
- Re-admission in DA course is not permissible under anycircumstances
- Results will be announced according to rules and regulations set by the Examination Branch of the Nishtar Medical University Multan

RECOMMENDED BOOKS

1. Aithenhead A. R., Smith G., Rowbotham D. J. ***Textbook of Anaesthesia***. 5th ed. Churchill Livingstone
2. Morgan G. E., Mikail M. S., Murray M. J. ***Clinical Anaesthesiology***. 4th ed. Lange
3. Yao and Artusio's. ***Anaesthesiology:Problem oriented Patient Management*** 5th ed. Lippincott Williams and Wilking
4. David P. D. and Kenny G. N. C. ***Basic Physics and Measurementin Anaesthesia.*** 5th ed. Butterworth Heinmann
5. Rana M. H., Ali S. Mustafa M. ***A Handnook of Behavioural Sciences for Medical and Dental Students***. Lahore: University ofHealth 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 Anaesthesiology
2. Anaesthesia (British Journal)
3. Anaesthesia and Analgesia (American Journal)
4. Anaesthesia and Critical Care (British Journal)