CURRICULUM FOR BS

ANESTHESIA

INSTITUTEOFPARAMEDICALSCIENCESKHYBERMEDICALUNIVERSITYPESHAWAR

## INTRODUCATION

TheBSAnesthesiacourseisafouryearsdegreeprogrammedaimedattrainingstudentsinthe technologicalspheresofanesthesiacarewithagoodscientificfoundation.Thesestudentswill beinapositiontoassistthehealthcareprovider(Anesthesiologist,Surgeon).Oncompletionof thecoursetheywillplayakeyroleindeterminethequalityofhealthcarefacilitiesinthe province,countryandacrosstheglobe.Withadvancetraininginthelatesttechnologythese studentswillabletoopenthedoorofnewresearchinanesthesiatechnologyandensurethe safety of the patient at the maximum.

# OBJECTIVES

To equip the anesthesiatechnologist with modern skills and latest technical knowledge to help in health care delivery system and to prepare thegraduate for higher studies and research purpose.

## FRAMEWORKFOR BSANESTHESIA

Programmed duration ‐‐‐‐‐‐‐‐‐ 4 year Total semester‐‐‐‐‐‐‐‐‐‐‐‐‐‐‐‐‐‐8 semesters Totalcredithour ‐‐‐‐‐‐‐‐‐‐‐‐‐‐‐‐ 124‐142

Course loadper semester‐‐‐‐‐‐16‐18 Cr/hour

## SEMESTERWISE SUBJECTS BS ANESTHESIA

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| **Semester** | **Coursecode** | **Subject** | **Credithours** |
| 1st | PMS‐601 | MEDICAL BIOCHEMISTRY‐I | 4(3+1) |
|  | PMS‐602 | HUMANPHYSIOLOGY‐I | 4(3+1) |
|  | PMS‐603 | HUMAN ANATOMY‐I | 4(3+1) |
|  | PMS‐604 | ENGLISH‐I | 2(2+0) |
|  | PMS‐605 | PAK STUDIES | 2(2+0) |
|  | PMS‐606 | COMPUTER SKILLS | 2(2+0) |
|  |  | **Totalcredit hours** | **18** |
| 2nd | PMS‐607 | MEDICAL BIOCHEMISTRY‐II | 4(3+1) |
|  | PMS‐608 | HUMAN PHYSIOLOGY‐II | 4(3+1) |
|  | PMS‐609 | HUMANANATOMY‐II | 4(3+1) |
|  | PMS‐610 | ENGLISH‐II | 2(2+0) |
|  | PMS‐611 | ISLAMIC STUDIES | 2(2+0) |
|  |  | **Total Credit Hour** | **16** |
| 3rd | ANS‐601 | ANATOMYRELATEDTOANESTHESIA | 3(2+1) |
|  | PMS‐612 | GENERALPATHOLOGY‐1 | 3(2+1) |
|  | PMS‐614 | PHARMACOLOGY‐1 | 3(2+1) |
|  | PMS‐613 | MEDICALMICROBIOLOGY‐I | 3(2+1) |
|  | MLT‐601 | HEMATOLOGY‐I | 3(2+1) |
|  | PMS‐615 | COMMUNICATION SKILL | 2(1+1) |
|  |  | **Total Credit Hour** | **17** |
| 4th | ANS‐602 | PHYSIOLOGY RELATED TO ANESTHESIA | 3(2+1) |
|  | ANS‐603 | PHYSICSRELATEDTOANESTHESIA | 3(2+1) |
|  | ANS‐604 | COMMUNITY MEDICINE | 2(2+0) |
|  | MLT‐604 | HEMATALOGY II | 3(2+1) |
|  | PMS‐617 | PATHOLOGY‐II | 3(2+1) |
|  | PMS‐616 | PHARMACOLOGY‐II | 3(2+1) |
|  |  | **Total Credit Hour** | **17** |
| 5th | ANS‐605 | PHARMACOLOGY RELATED TO ANESTHESIA | 3(2+1) |
|  | ANS‐606 | ANESTHESIAEQUIPMENT | 3(2+1) |
|  | ANS‐607 | HISTROY TAKEING PRE‐OPERATIVE ASSESMENT& MEDICATIONPOST‐OPE CARE | 3(2+1) |
|  | ANS‐608 | ANESTHESIAAND CO‐EXISTING DISEASES | 3(2+1) |
|  | ANS‐609 | CRITICALCARE | 3(2+1) |
|  | ANS‐610 | LEADERSHIPAND MANAGEMNT | 2(2+0) |
|  |  | **Total Credit Hour** | **17** |

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| 6th | ANS‐611 | DIFFERENT TYPESOFANESTHEISA | 3(2+1) |
|  | ANS‐612 | ANESTHESIA RELATED COMPLICATIONS &THEIRMANAGEMNT | 3(2+1) |
|  | ANS‐613 | ANESTHESIAFOR CARDIOTHORIC SURGERY | 3(2+1) |
|  | ANS‐614 | ANESTHESIA FOR NEURO,EMERGENCY AND GERIATRIC SURGERY | 3(2+1) |
|  | PMS‐621 | RESEARCHMETHODOLOGY | 3(2+1) |
|  | PMS‐622 | BIOSTATICS | 3(2+1) |
|  |  | **Totalcredithours** | **18** |
| 7th | ANS‐615 | ANESTHESIAFORG/SURGERY  /ORTHOPADEICANDUROLOGICAL PROCEDURES | 3(2+1) |
|  | ANS‐616 | ANESTHESIAFOR EYE SURGICAL PROCEDURES | 3(2+1) |
|  | ANS‐617 | ANESTHESIAFOR EAR,NOSE,THORAT SURGERY | 3(2+1) |
|  | ANS‐618 | ANESTHESIA FOR OBSTERTIC &PADEATRIC SURGERY | 3(2+1) |
|  | ANS‐619 | ELECTROCARDIOGRAPHFORANESTHETIST | 3(2+1) |
|  | PMS‐623 | EPIDIMOLOGY | 2(2+0) |
|  |  | **Totalcredit hours** | **17** |
| 8th | PMS‐ 626 | RESEARCHPROJECT | 6(6) |
|  | PMS‐627 | SEMINAR | 1(1) |
|  | ANS‐620 | ANESTHESIAFORDENTAL,MAXILOFICAL,HEAD AND NECK SURGERY | 3(2+1) |
|  | PMS‐625 | BIOETHICS | 2(2+0) |
|  |  | **Totalcredit hours** | **12** |

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| **1stSEMESTERCOURSES** | **COURSECODE** |
| **1.MEDICAL BIOCHEMISTRY–I** | **PMS‐601** |
| **2.HUMANPHYSIOLOGY‐I** | **PMS‐602** |
| **3.HUMANANATOMY‐I** | **PMS‐603** |
| **4.ENGLISH‐I** | **PMS‐604** |
| **5.PAKSTUDIES** | **PMS‐605** |
| **6.COMPUTERSKILLS** | **PMS‐606** |

**PMS‐601 MEDICAL BIOCHEMISTRY‐I CreditHours:4(3+1)**

**Course objectives:**

After successful completion of this course, students will be able to,

* Describe the chemical composition, biochemical role, digestion and absorption of macro and micro molecules of the cell.
* Discuss different biochemical reactions in cell.
* Explain mechanism of action of hormones.

**Course contents:**

Biochemical composition and functions of the cell; Chemistry of signals and receptors; Structure and function of Carbohydrates, Proteins and lipids; biochemical functions of vitamins; biochemical function of Sodium, potassium, chloride, calcium, phosphorus, magnesium, sulfur, iodine and fluoride; Composition and function of saliva, gastric juice, gastric acid(HCL), pancreatic juice, bile and intestinal secretion; Digestion and absorption of proteins, carbohydrates, lipids, vitamins and minerals; Body buffers and their mechanism of action; Acid base regulation in human body; Biochemical mechanisms for control of water and electrolyte balance; Mechanism of action of hormones.

**Practicals:**

1. Good laboratory Practices
2. Preparation of Solutions
3. Principles of Medical Biochemistryanalyzers(spectrophotometer, flame photometer)
4. Determination of Cholesterol, Tg, HDL, LDL, sugar, calcium and phosphorus in blood
5. SOP of centrifuge, water bath and microscope

**Recommended Books**

* Harper’s Medical BiochemistryRobert K. Murray, Daryl K. Granner 28th edition 2009
* Medical Medical Biochemistry Mushtaq Ahmad vol. I and II 8th edition 2013

# PMS‐602 HUMANPHYSIOLOGY‐I CreditHours:4(3+1)

**Course Objectives:**

After successful completion of this course, students will be able to,

* Describe the basic concepts of physiology beginning from the cell organization to organ system function.
* Discuss the organization of cell, tissue, organ and system with respect to their functions.
* Explain the physiology of Respiration, G.I.T, Urinary system and Endocrine system

**Course contents:**

Functional organization of human body, Mechanism of Homeostasis, Cell structure and its function, function of different Tissues, Functions of the skin, , Types and function of muscle, Neuromuscular junction, functions of the endocrine glands, Breathing Mechanism, Exchange of respiratory Gaseous, Transport of respiratory gases, Function of different part of Digestive system, Function of liver and pancreas, Digestion and Absorption in Gastrointestinal tract, Patho-Physiology of Gastrointestinal Disorders, Formation of Urine by the Kidney, Glomerular filtration, Renal and associated mechanism for controlling ECF, Regulation of Acid-Base Balance, Male Reproductive System ( Male ), Prostate gland, Spermatogenesis, Female Reproductive System, Menstrual Cycle and Pregnancy and parturition, Mammary Glands and Lactation and Fertility Control

**Practicals:**

1. Introduction to microscope

2. Bleeding time

3. Clotting time

4. Blood cells count (RBCs, WBCs , Platelets, Reticulocytes)

**Recommended Books**:

* Essentials of Medical Physiology K Sembulingam, PremaSembulingam Sixth Edition 2013
* Guyton And Hall Textbook Of Medical Physiology John E. Hall, Arthur C. Guyton Professor and Chair 2006
* Ross and Wilson Anatomy and Physiology in Health And Illness 11th Edition Anne Waugh, Allison Grant 2010

## PMS‐603 HUMANANATOMY‐I CreditHours:4(3+1)

**Course Objectives:**

After successful completion of this course, students will be able to,

* Identify the principle structures of tissues, organs and systems.
* Discuss the different concepts and terms of general anatomy including skeleton and Musculo skeletal system.
* Explain the anatomy of Thorax, Abdomen and pelvis.

**Course contents:**

**General Anatomy**; Descriptive Anatomic terms, Basic structures, Musculo skeletal system (Axial and Appendicular), Different bones of the human body and their surface markings, General concepts, parts , classifications of bones, Structural, Regional and functional classification of joints, Characteristics, Classifications, Movements of synovial joints. Muscular System (skeletal, Cardiac, smooth)**Thoracic wall**: Structure of the anterior thoracic wall, Muscles of thorax, Diaphragm **Thoracic cavity**: Mediastinum, Trachea, lungs, pleura , bronchi, blood supply and lymphatics, Heart and thoracic vessels **Abdominal wall**: Skin, nerve and blood supply, Muscles of anterior abdominal wall, Inguinal canal **Abdominal cavity**: General Arrangement of the Abdominal Visceras, Peritoneum, Omenta, mesenteries, GIT and its blood supply, Accessory Organs ( Liver, Spleen, Gall bladder, Pancreas), Genitourinary System (Kidneys, Utreters) **The pelvic wall**: Anterior, posterior wall, diaphragm. **Pelvic cavity**: Uterus, Ovaries, Fallopian tubes, urinary bladder, Male genital organs, Female genital organs, Muscles of pelvic region, blood supply, nerve supply.

**Practicals:**

1. Study Axial, Appendicular skeleton and musculoskeletal system on human skeletal models.
2. Study and identification of the anatomy of Thorax, Abdomen and Pelvis through:
3. Human Models 4. Video demonstrations

**Recommended Books:**

* Clinical Anatomy (By regions) 9th edition, Richard S. Snell
* Netter Atlas of human anatomy 5th Edition Saunders.
* Gray’s Anatomy for students 2nd Edition Drake VogalMitcell.

## PMS ‐604 ENGLISH –I Credit Hours: 2(2+0)

**Course Objective:**

After successful completion of this course, students will be able to,

* Compose a well-constructed essay that develops a clearly defined claim of interpretation which is supported by close textual reading.
* Utilize literary terminology, critical methods, and various lenses of interpretation in their writing.
* Apply the rules of English grammar.
* Adhere to the formatting and documenting conventions of our discipline.

**Course Contents:**

Vocabulary Building Skills: Antonyms, Synonyms, Homonyms, One word Substitute, Prefixes and suffixes, Idioms and phrasal verbs, Logical connectors, Check spellings, Practical Grammar & Writing Skill: Parts of Speech, Tenses, Paragraph writing: Practice in writing a good, unified and coherent paragraph, Précis writing and comprehension, Translation skills: Urdu to English, Reading skills: Skimming and scanning, intensive and extensive, and speed reading, summary and comprehension Paragraphs, Presentation skills: Developing, Oral Presentation skill, Personality development (emphasis on content, style and pronunciation)

**Recommended books:**

* Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press 1986. ISBN 0 19 431350 6.
* Reading. Advanced. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1991. ISBN 0 19 453403 0.

## PMS‐605 PakistanStudiesCredit Hours:2(2+0)

**Course Objectives:**

After successful completion of this course, students will be able to,

* Develop vision of Historical Perspective, Government, Politics, Contemporary Pakistan, ideological background of Pakistan.
* Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.
* Inculcate patriotism in the hearts of students so that they may become a good citizen.

**Course Contents:**

Historical Perspective: Ideological rationale with special reference to Sir Syed Ahmed Khan, Allama Muhammad Iqbal and Quaid-i-Azam Muhammad Ali Jinnah, Factors leading to Muslim separatism, People and Land, Indus Civilization, Muslim advent, Location and Geo-Physical features. Government and Politics in Pakistan, Political and constitutional phases:1947-58,1958-71,1971-77,1977-88,1988-99,1999 onward Contemporary Pakistan: Economic institutions and issues, Society and social structure, Ethnicity, Foreign policy of Pakistan and challenges, Futuristic outlook of Pakistan

**Recommended Books:**

* Akbar, S. Zaidi. *Issue in Pakistan’s Economy.*  Karachi: Oxford University Press, 2000.
* Mehmood, Safdar. *Pakistan KayyunToota,* Lahore: Idara-e-Saqafat-e-Islamia, Club Road, nd.
* Amin, Tahir. *Ethno -National Movement in Pakistan,* Islamabad: Institute of Policy Studies, Islamabad.
* Afzal, M. Rafique. *Political Parties in Pakistan,* Vol. I, II & III. Islamabad: National Institute of Historical and cultural Research, 1998.

## PMS ‐606 COMPUTERSKILLS CreditCourse: 2(1+1)

**Course Objectives**

After successful completion of this course, students will be able to,

* Use technology ethically, safely, securely, and legally.
* Identify and analyze computer hardware, software, and network components.
* Design basic business web pages using current HTML/CSS coding standards.
* Install, configure, and remove software and hardware.

**Course Contents:**

INTRODUCTION TO COMPUTER: I/O devices –memories, Networking – LAN,WAN,MAN (only basic ideas), TYPING TEXT IN MS WORD: Manipulating text, Formatting text - using different font sizes, bold, italics, Bullets and numbering, Pictures, file insertion, Aligning the text and justify, Choosing paper size - Adjusting margins, Header and footer, inserting page No s in a document, Printing a file with options, Using spell check and grammar, CREATING TABLE IN MS EXCEL: Cell editing-Using formulas and functions, Manipulating data with excel, PREPARING NEW SLIDES USING MS- POWER POINT: Inserting slides – Slide transition and animation, Using templates, Different text and font sizes –Slides with sounds – Inserting

clips arts, pictures, tables and graphs- Presenting using wizards, INTRODUCTION TO INTERNET Using search engine – Google search – Exploring the next using Internet Explorer and Navigator and Download of files and images – E-mail ID creation, Sending messages- Attaching files.

**Practicals:**

• Typing a text and aligning the text with different format using MS –Word

• Inserting a table with proper alignment and using MS-Word

• Create mail merge document using MS-Word to prepare greetings for 10 friends

• Preparing a Slide show with transition, animation and sound effect using MS-Power point

• Creating a worksheet using MS-Excel with data and use of functions

• Using MS-Excel prepare a worksheet with text, date time and data

• Preparing a chart and pie diagrams using MS-Excel

• Internet for searching, uploading files, downloading files and creating e-mail ID

• C language writing programs using functions

**Recommended Books:**

* CAMBRIDGE IGCSE® COMPUTER SCIENCE STUDY AND REVISION GUIDE (pb)2016
* Computer science by Muhammad Ashraf, edition 1st 2010

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| **2ndSEMESTERCOURSES** | **COURSECODE** |
| **1.MEDICAL BIOCHEMISTRY‐II** | PMS‐607 |
| **2.HUMANPHYSIOLOGY‐II** | PMS‐608 |
| **3.HUMANANATOMY‐II** | PMS‐609 |
| **4.ENGLISH‐II** | PMS‐610 |
| **5.ISLAMICSTUDIES** | PMS‐611 |

**PMS‐607 Medical Biochemistry‐II Credithours4(3+1)**

After successful completion of this course, students will be able to,

* Describe the synthesis of proteins, lipids, nucleic acids, carbohydrates and their role in metabolic pathways along with their regulation.
* Discuss the clinical role of enzymes in human being.
* Interpret and apply nutritional concepts to evaluate and improve the nutritional health of individuals with medical conditions.

**Course Contents:**

Balance food, Major food groups, Nutritional status of Pakistani nation, Metabolic changes in starvation, Protein energy malnutrition, Regulation of food intake, Obesity; metabolism of carbohydrates (Citric Acid Cycle, Glycolysis, Pentose Phosphate Pathway), proteins (urea and corie cycle), nucleotides (uric acid formation) and lipids (beta oxidation); Respiratory chain and oxidative phosphorylation, components of respiratory chain, electron carriers, ATP synthesis coupled with electron flow, phosphorylation of ADP coupled to electron transfer; clinical diagnostic enzymology.

**Practicals:**

* + 1. Determination of liver, cardiac, pancreatic enzymes
    2. Determination of urea and uric acid

**Recommended Books:**

* Harper’s Medical BiochemistryRobert K. Murray, Daryl K. Granner 28th edition 2009
* Medical Medical Biochemistry Mushtaq Ahmad vol. I and II 8th edition 2013

## PMS‐608 HumanPhysiology‐II CreditHours:(3+1)

**Course Objectives:**

After successful completion of this course, students will be able to,

* Demonstrate a systematic and coherent knowledge of the physiological functioning of the central nervous system, special senses (CNS & SS), cardiovascular system and respiratory system.
* Describe the formation of the formed element components of blood.
* Identify the components and function of the lymphatic system and discuss the role of the innate immune response against pathogens.

**Course Contents:** Physiology of Nervous System, Function of various cranial nerves, Functions of somatic motor nervous system Functions of the autonomic nervous system, function of neurons, neuroglial cells and their components. Resting membrane potential and an action potential, function of a synapse and reflex arc, functions of the specialized sense organs: Eye, physiology of site, accommodation, optic nerve and optic chiasma, Ear, functions of the internal, middle and external ear Physiology of the hearing and balance, Smell, physiology of olfactory nerve. Taste, physiology of taste Location of the taste buds Physiology of speech, Blood: Composition and function of Blood , haematopoisis, Blood grouping, Coagulation mechanism, Physiology of Cardiovascular system The Physiology of Pulmonary Systemic Circulation: Arteries Veins Local Control of Blood Vessels Nervous Control of Blood Vessels Regulation of Arterial Pressure, The function of Lymphatic System, tonsils, lymph nodes, the spleen and the thymus, Classification and physiology of Immune system, Antigens and Antibodies, Primary and secondary responses to an antigen Antibody-mediated immunity and cell-mediated immunity Role of lymphocyte in immunity regulation.

**Practicals**

1. Spirometry

2. Electrocardiography

3. Blood Pressure Measurement

4. Normal and abnormal ECG interpretation

5. Pulse rate measurement

6. Heart sounds

**Recommended Books**

* Essentials of Medical Physiology K Sembulingam, PremaSembulingam Sixth Edition 2013
* Guyton And Hall Textbook Of Medical Physiology John E. Hall, Arthur C. Guyton Professor and Chair 2006

## PMS‐609 HUMANANATOMY‐II Credit Hours:4(3+1)

**CourseObjectives:**

After successful completion of this course, students will be able to,

* Identify bones of the upper limb and bony landmarks that articulate at each joint with all muscular compartments of the upper limb.
* Discuss bones of the lower limb and bony landmarks that articulate at each joint with all muscular compartments of the lower limb and identify these structures on radiographic images.
* Describe the topographical and functional anatomy of the head and neck, in particular the arrangement, relations and structure of the major skeletal, muscular and neurovascular components of the head and neck.

**Course contents:**

**The upper limb** Bones of shoulder girdle and Arm, Muscles, Axilla, Brachial plexus, Cubital fossa, the forearm, hand bones, Blood supply, Nerve supply, lymphatics **The lower limb** Fascia, Bones of the thigh, leg and foot, Muscles, Femoral triangle, Blood, Nerve, Lymphatic supply **Head and neck** Skull and facial bones, Cranial nerves, cranial cavity, Scalp, Meninges, Brain, Orbit, Muscles of the Neck, arterial and venous supply of the head and neck, The autonomic nervous system in the head and neck, Salivary Glands

**Practicals:**

Identification of the structures and the anatomy of Upper limb, Lower limb, Head and Neck through:

1. Human Models 2. Video demonstration

3. Study radiographs of upper limb, lower limb, and skull

**Recommended Books:**

* Clinical Anatomy (By regions) 9th edition, Richard S. Snell
* Ross and Wilson Anatomy and Physiology in health and illness 11th Edition Waugh Grant.
* Netter Atlas of human anatomy 5th Edition Saunders.
* Gray’s Anatomy for students 2nd Edition Drake VogalMitcell

## PMS‐610 ENGLISH–II CreditHours: (2+0)

**Course Objectives:**

After successful completion of this course, students will be able to,

* Develop writing, reading and listening skills.
* Demonstrate integrative and independent thinking, originality, imagination, experimentation, problem solving, or risk taking in thought, expression, or intellectual engagement.
* Participate in discussions by listening to others' perspectives, asking productive questions, and articulating original ideas.

**Course contents:**

Writing Skill: CV and job application, Technical Report writing, Writing styles, Changing narration: Converting a dialogue into a report, Converting a story into a news report, Converting a graph or picture into a short report or story, Active and Passive voice, Letter / memo writing and minutes of the meeting, use of library and internet recourses, Essay writing, Phrases - Types and functions, Clauses - Types and functions, Punctuation: Tenses - Types, Structure, Function, Conversion into negative and interrogative. Speaking Skill: Group Discussion (Various topics given by the teacher), Presentation by the students (individually), Role Play Activities for improving Speaking. Listening Skill: Listening Various Documentaries, Movies, and online listening activities to improve the listening as well as pronunciation of the words.

**Recommended Books:**

* Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 1. Third edition. Oxford University Press. 1997. ISBN 0194313492.
* Practical English Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition. Oxford University Press 1986. ISBN 0 19 431350 6.

## PMS‐611 ISLAMICSTUDIES CreditHours: (2+0)

**CourseObjectives:**

After successful completion of this course, students will be able to,

* Recognize basic concept of Islam (faith, pillars and systems etc.) and express their impact on society.
* Present Islam as complete code of life and demonstrate understanding of Islamic Ethics.
* Demonstrate the role of a medical professional in Islam.

**Course contents:**

Fundamental beliefs of Islam, Belief of Tawheed, Belief in Prophet hood, Belief in the Day of Judgment, Worships, Salaat / Prayer, Zakat /Obligatory Charity, Saum / Fasting, Hajj / Pilgrimage, Jihad, Importance of Paramedics In Islam, Ethics, Religion and Ethics, Higher Intents / Objectives of Islamic Sharia and Human Health, Importance and Virtues of Medical Profession, Contribution and Achievements of Muslim Doctors, Knowledge of the Rights, Wisdom and Prudence, Sympathy /Empathy, Responsible Life, Patience, Humbleness, Self Respect, Forgiveness, Kindhearted, Beneficence, Self Confidence, Observing Promise, Equality, Relation among the Doctors, Jealousy, Backbiting, Envy, Etiquettes of Gathering, Relation between a Doctor and a Patient, Gentle Speaking, Mercy and Affection, Consoling the Patient, To inquire the health of Patient, Character building of the Patient, Responsibilities of a Doctor,

**Recommended Books**:

* Islamiyat (Compulsory) for Khyber Medical University, Medical Colleges and Allied Institutes

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| **3rdSemesterCourses** | **COURSESCODE** |
| **1.GENERALPATHOLOGY‐I** | PMS‐612 |
| **2.PHARMACOLOGY‐I** | PMS‐614 |
| **3.ANATOMYRELATEDTO ANESTHESIA** | ANS‐601 |
| **4.HEMATOLOGY‐I** | MLT‐601 |
| **5.COMMUNICATIONSKILLS** | PMS‐615 |
| **6.MEDICALMICROBIOLOGY‐I (Non MLTstudents)** | PMS‐613 |

## PMS‐612 General Pathology‐I CreditHours: (2+1)

**Course Objectives**

After successful completion of this course, students will be able to,

* Specify the abnormalities of cell growth and differentiation.
* Describe cellular responses to stress and noxious stimuli and inflammation.
* Discuss cell injury, cell death and mechanisms involved in wound healing.
* Explain the hemodynamic disorders and neoplasia.

**Course Contents**

**Cell Injury & adaptation** Cell injury, Cellular adaptation

**Inflammation** Acute Inflammation, Chronic Inflammation

**Cell Repair & Wound Healing** Regeneration & Repair, Healing Factors affecting Healing

**Hemodynamic Disorders** Define & classify the terms, Edema, Hemorrhage, Thrombosis, Embolism, Infarction & Hyperemia, Shock, compensatory mechanism of shock, possible consequences of thrombosis & difference between arterial & venous emboli

**Neoplasia** Dysplasia& Neoplasia Difference between benign & malignant neoplasm, etiological factors for Neoplasia, different modes of metastasis

**Practicals**

* Blood culture
* Urine & stool examination
* Gram staining
* Neoplasia: Characteristics of malignancy

**Recommended Books**

* Robbins and Cotran Pathologic Basis of Disease, Professional Edition, 8th Edition

## PMS‐614 Pharmacology‐I CreditHours:(2+1)

**Course Objectives**

After successful completion of this course, students will be able to,

* Describe common terms related to pharmacology and drug therapy.
* Identify a range of drugs used in medicine and discuss their mechanisms of action.
* Report the clinical applications, side effects and toxicities of drugs used in medicine.

**Course Contents:**

Introduction to Pharmacology, Pharmacokinetics, Pharmacodynamics ,Adverse effects of drugs, Classification of drugs, Drugs affecting the Autonomic Nervous System, NSAIDS, Opioids, Drugs Affecting Endocrine system (Corticosteroids, Thyroid and anti Thyroid Gastrointestinal Drugs (PPIs, Blockers and antacids) , Antihistamines, Anesthetics (General and Local Anesthetics)

**Practicals:**

* Routes of drug administration
* Introduction to drug dosage form
* Study of the action of drugs (Atropine) on the rabbit's eye
* Dose‐Response Curves
* Effect of adrenaline on pulse rate
* Effect of beta blockers on heart rate after exercise
* Preparation of Sulfur ointment and pilocarpine drops
* Prescription writing

**Recommended Books:**

* Lippincott’s pharmacology (text book) by Mycek 2nd edition published by Lippincott Raven
* Katzung textbook of pharmacology (Reference Book) by Bertram Katzung 8th Edition, Published by Appleton.

## ANS‐601 ANATOMYRELATEDTOANESTHESIA Credithour 2+1Course objective:

* + Students are expected to understand relevant basic anatomicalstructures knowledge whichhelpsinthe identification ofvariousorganspositionneed foranesthesia practice.

## Course Contents

Heartandpericardium,greatandmajorvessels,fetalcirculation,mouthnoseandpharynx, larynx,tracheaandbronchi,pleuraandlungs,diaphragm,brainandspinalcord,spinalnerves, cervicallexus,brachialplexus,intercostalnerves,lumbarplexus,Sacro‐coccygealplexus, autonomicnervoussystem,stellateganglion,coeliacplexus,cranialnerves,vertebralColumn, vertebrae,sacrum,ligaments,thoracicinlet,intercostalspaces,abdominalwallandinguinal region, Antecubital fossa, large veins of neck and leg,

## Practical’s:

1. Demonstration of surfacefeatureof theheart
2. Demonstrationofgreat vesselsanditsbranches
3. Demonstration on surface marking of lungs
4. Demonstration on larynx cartilages(cricoids,thyroid,epiglottis cartilages)
5. Demonstrationontrachea
6. DemonstrationofBrainandSpinalcord

## Recommended books:

* + ConciseAnatomy forAnesthesia.Erdmann.,Andres.,2ndedition
  + Essential Anatomy for Anesthesia Black.,sue.,M,.Chambers.,Alatair.,W,.
  + Atlasof humananatomy.Netter.,Frankh,. 5THedition.

## MLT‐601 Hematology‐I Credithours3(2+1)

**Course Objectives:**

By the end of this semester the studentsofBStechnology 3rdsemesterwill be ableto

* + Discuss basic concepts in Hematologyandacquire skillinpractical workto produce students steeped in knowledge of Hematology
  + Interpretthe testsresult ofthe basic hematological proceduresforaccuratediagnosis andpatient’smonitoring

## Course Content:

Introduction tohematology,physiologyofbloodandcomposition,Introductiontobonemarrow, structureandfunctionofbonemarrow,Bloodformationinthebody(Intra‐uterineand extrauterine),factorsgoverninghematopoiesis,Erythropoiesis,differentstagesandfactor effectingonerythropoiesis,Granulopoiesis,differentstagesandfactoreffectingon granulopoiesis,Introductiontohemoglobin,structure,synthesisandfunctionofhemoglobin, completebloodcount(CBC)anditsimportance,Morphologyofredbloodcellsandwhiteblood cellsanditsimportanceinvarioushematologicaldisorders,Introductiontoanemiaits classification,Introductiontohemolysis(physiologicalandpathological),IntroductiontoWBC disorders,introductiontoleukemia,etiology,pathogenesisanditsclassification,Leukocytosis, leukopenia,Neutrophilia,conditionrelatedtoneutrophilia,Eosinophilia,conditionrelatedto eosinophilia,Monocytosis,conditionrelatedtomonocytosis,Lymphocytosis,conditionrelated tolymphocytosis,Introductiontohemostasis,mechanismofhemostasis,functionofplatelets andcoagulationfactors,Coagulationcascade,quantitativedisorderofplatelets,qualitative disorderof platelets.

## Practical:

1. Collectionofbloodsample
2. Preparationandstaining ofperipheralbloodsmear
3. Total leucocyte count,rbc count
4. Determination of absolute values
5. Differential leucocytecount; platelets count and reticulocytescount
6. To determine the esr
7. Determine bleeding time; prothrombin time;activated partial thromboplastin time

# Books:

* + Essential of Hematology,A.VHoff Brand,6th edition 2006
  + EssentialofhematologybyJP
  + ClinicalHematology,G.CDegrunchi,5thedition2002
  + PracticalHematology,Dacie J.V. 10thedition2012

## PMS—615 COMMUNICATIONSKILLS CreditHours: (1+1)

**Course Objectives**

After successful completion of this course, students will be able to,

* Communicate effectively both verbally and non-verbally
* Apply the requisite academic communication skills in their essay writing and other forms of academic writing
* Use various computer-mediated communication platforms in their academic and professional work
* Relate the interpersonal and organizational dynamics that affect effective communication in organizations.

**Course Contents**

Introduction to Communication, Meaning and definition of Communication, The process of communication, Models of communication

Effective Communications in Business, Importance and Benefits of effective communication, Components of Communication, Communication barriers, Non verbal communication

Principles of effective communication, Seven Cs.

Communication for academic purposes, Introduction to academic writing, Summarizing, paraphrasing and argumentation skills, Textual cohesion

Communication in Organizations, Formal communication networks in organizations, Informal communication networks, Computer- mediated communication (videoconferencing, internet, e-mail, Skype, groupware, etc)

Business Writing, Memos, Letters, Reports, Proposals, Circulars, etc

Public Speaking and Presentation skills**,** Effective public presentation skills, Audience analysis, Effective argumentation skills, Interview skills

**Recommended books:**

* Interpersonal CommunicationPaperback by Kory Floyd
* Reading into Writing 1: English for Academic Purposes: A Handbook-Workbook for College Freshman English (Mass Market Paperback) by Concepcion D. Dadufalza (Lecture Notes/Presentations)

## PMS‐‐613 MEDICAL MICROBIOLOGY‐I(Non‐MLT) Credit Hours:(2+1)

**Courseobjectives:**

* + To introduce the studentswith basic conceptsinbacteriologyandmycology.
  + Tointroducethestudentswith commonbacterial andfungalinfections.
  + Tointroducethestudentswith diagnosisof common bacterialand fungal infections.

## Course contents:

Historicalreviewandscopeofmicrobiology,sterilization,structureandfunctionofprokaryotic cell,differencebetweenprokaryoticandeukaryoticcell,bacterialgrowth,normalmicrobialflora ofhumanbody,mechanismofbacterialpathogenesis,hostparasiteinteraction,Immune responsetoinfection,commonbacterialpathogenprevailinginPakistan,introductiontofungi, fungalcharacteristic,morphology,structure,replicationandclassification,mechanismoffungal pathogenesis,commonfungal pathogenprevailinginPakistan.

## Practical:

1. Introduction and demonstrationof Laboratory Equipmentsusedin Microbiology.
2. Inoculationand isolation of pure bacterial culture and its antibiotic susceptibility testing.
3. Demonstration of different types of physical andchemical methodsofsterilization,and disinfection.
4. Studentsshouldbethoroughtowork withcompoundmicroscope.
5. Detectionofmotility: Hangingdropexaminationswithmotile bacteria, non‐motile

bacteria.

1. Simple staining methodsof pure culture and mixed culture.
2. Gram’s staining of pure culture and mixed culture.
3. AFB staining of Normal smear, AFB positive smear.
4. KOH preparation for fungal hyphae.
5. Germ tube test for yeastidentification.
6. Gram stainforcandida.

## Recommended books:

* + Sherris Medical Microbiology: AnIntroductionto InfectiousDiseases. Ryan, K. J.,Ray, C. G., 4th ed. McGraw‐Hill, 2003.
  + ClinicalMicrobiology Made Ridiculously Simple. Gladwin,M.,&Trattler, B., 3rd ed.

MedMaster, 2004.

* + Medical Microbiology and InfectionataGlance. Gillespie,S., H.,Bamford,K., B., 4th ed.

Wiley‐Blackwell, 2012.

* + Medical Microbiology,Kayser, F., H.,&Bienz, K., A., Thieme,2005.
  + Review ofMedicalMicrobiologyandImmunology.Levinson,W., 10th ed. McGraw Hill Professional, 2008.
  + Jawetz,Melnick,&Adelberg'sMedicalMicrobiology.Brooks,G., Carroll, K., C., Butel,J.,

&Morse,S.,26thed.McGraw‐HillMedical, 2012.

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| 4thSEMESTER COURSES | Course code |
| 1. PHARMACOLOGY‐II | PMS‐616 |
| 2.PATHOLOGY‐II | PMS‐617 |
| 3. PHYSIOLOGY RELATED TO ANESTHESIA | ANS‐602 |
| 4. PHYSICS RELATED TO ANESTHESIA | ANS‐603 |
| 5.COMMUNITYMEDICINE | ANS‐604 |
| 6.HEMATOLOGYII(NonMLTStudents) | MLT‐604 |

## PMS—616 PHARMACOLOGY‐II CreditHours:3(2+1)

**Courseobjectives:**

* + To provide quality patientcare inroutine aswellasadvancedprocedures.
  + To understandthe mechanism ofdrugactionatmolecular aswell as cellular level, both desirable andadverse.
  + Tounderstandtheprinciplesof pharmacokineticsi.e.drugabsorption, distribution, metabolism and excretion and be able to apply these principlesin therapeutic practice.

## Course contents:

Drugsactingoncardiovascularsystem;Drugsforheartfailure,anti‐hypertensivedrugs, antianginaldrugs,AntiHyperlipidemicdrugs,Blooddrugs(Anticoagulants),Diuretics, Chemotherapeuticsdrugs([Anti‐protozol,Anti‐Malarial],Anti‐Fungal,Anthelmintic), Antibiotics(Penicillin’s,cephalosporin’s,macrolides,aminoglycosides,fluroquinolones),Drugs acting on Respiratory system(Asthma).

## Practical:

1. Routes of drug administration
2. Dose‐ResponseCurves
3. Affect of adrenaline on pulse rate
4. Affectof beta blockersonheart rateafterexercise
5. Source of drug and identification of some raw materials that are sourceof drug
6. Weight conversionsandmeasurements
7. PreparationSulfurointment
8. Preparation of pilocarpine drops
9. Prescriptionwriting

## Recommended Books:

* + Lippincott’spharmacology (text book) by Mycek2ndEdition published by Lippincott Raven 2000.
  + Katzungtextbookofpharmacology(Reference Book) by Bertram Katzung8th Edition, Publishedby Appleton.dec 2007.

## PMS—617 PATHOLOGY‐II Credit Hours: ( 2+1)

**CourseObjectives:**

* + Tointroducestudents withdifferent environmentalhazards
  + Togain knowledgeof somebasicsystemicdiseases

## Course contents:

Healtheffectsofclimatechange,toxicityofchemicalandphysicalagents,environmental pollution,effectoftobacco,effectofalcohol,injurybytherapeuticdrugsanddrugsofabuse, generalprinciplesofmicrobialpathogenesis,specialtechniquesforidentifyinginfectiousagents, agentsofbioterrorism,heartfailure,congenitalheartdiseases,ischemicheartdiseases, hypertensiveheartdiseases,arrhythmias,atelectasis,chronicobstructivepulmonarydisease, asthma,bronchiactasis,pneumonias,pneumothorax,hemothorax,nephroticsyndrome,renal stone,hydronephrosis,aphthousulcer,gastritis,pepticulcer,hemorrhoid,jaundice,liver cirrhosis, viral hepatitis,cholecystitis, urinary tract infections, arthritis, facial palsy

## Practicals:

1. Helicobacterpyloritest
2. DiagnosismethodsofUTI
3. Determinationofrenal functiontests
4. Determination of liver function tests
5. Determination of cardiac profile

## Recommended Books:

* + RobbinsBasicPathologyKumarAbbasAster 9thEdition2013
  + Review Of General Pathology Moh.Firdaus, 9th Edition
  + ShortTextBookofPathologyMoh. InamDanish 3rdEdition 2006

## ANS‐602 PHYSIOLOGY RELATED TO ANESTHESIA Credithour(2+1)

**Course objective:**

* + Students are expected to understand various physiologicalmechanisms, principles,and application these, in anesthesia practice. To demonstrate abilitiestomaintainedthe
  + Variousphysiologicalvariableswithinnormalrange.

## Course contents

Heartrateregulation,cardiacperformance,coronarycirculation,cardiacoutputandits regulatingfactors,bloodpressure,heartsound,pulse,ECG,mechanismofrespiration,controlof respiration,lungvolumesandcapacities,transportofrespiratorygases,respiratoryreflexes, hypoxia,artificialrespiration,formationandcirculationofcerebrospinalfluid(CSF),intracranial pressure,Receptors,muscles,neuromuscularjunction,Synapses,Acidbasebalance,Diuretics, mechanismofvomiting,liverphysiologyandanesthesia,pancreasphysiologyandanesthesia, gall bladder, thermoregulation, painmechanism,

## Practiacls:

1. Recording of blood pressure and pulses rate normal & followingexercise
2. Electro Cardio Gram (ECG) tracingonanormalandpathologicalconditions
3. Auscultation of heart soundsand interpretation
4. Spirometryanddescriptionofnormal andpathologicalfindings
5. Different pulseandmeasurement
6. Understand painscaleanditsapplication
7. Normalhemoglobinlevel

**Recommended books**:

* + Pharmacology andphysiologyinanesthesia.K.,Robert,.Stoelting,.Hiller,.C,.Simon,.2ndedition.
  + Textbook ofMedical physiology. Guyton &Hill,.12thedition.
  + Fundamentalofanesthesia.Smith,.Tim,. Colinpinock,.Ted line,.Johan,.Robert,.3RDedition.

## ANS‐603 PHYSICSRELATEDTOANESTHESIA Credithour:(3+1)Course Objective

* + Students are expected to understand states of matter, principlesofdynamicsofgases and fluid, apply knowledge in practice, and to demonstrate abilities in the anesthesia management of in therealmof physics

## Course contents:

Fundamentalconceptsinsystemicinternationalunit,temperature,gaslaws,kinetictheoryof gas,colorcodingofanestheticgases,cylinders,medicalgaspipelinesystemandstation,air compressor,oxygenconcentrator,gasadministrationdevices,oxygentherapy,humidification, aerosolspray.Dynamicsofinhalationalanesthesia,anesthetictransferprocess,measureflow system,hypobaricstate,hyperbaricstate,laminarflow,turbulentflow,dalton’slaw,minimum alveolarconcentration(mac),specificheat,heatvaporization,pneumothorax,airembolism, square‐root‐of‐timeruleandanestheticuptake,anesthesiamachineresistance,turbulentflow,rebreathing,dilution,leak,humidity,heat,secondgaseffect,principleofdoppler ultrasound,waste gas evacuation,mechanicaldead space,oxygenpurification detector device

## Practicles:

1. Understanding of anesthesia cylinder, colorcoding,arrangementof different type of cylinder
2. Medicalgaspipeline system
3. Understandingadminastrationof gasflow
4. Simple oxygen admistration devices
5. Method ofcontrolling gas flow
6. Oxygen concentrator
7. Useofoxygen puritymeter

## Recommendedbooks:

* + Physics in anesthesia for ODPS, Nurse Anesthetists. Middleton,.Ben,.

Stacey,.Thomas,.Rik,.Tustin,. Phillips,.3rdedition.

* + Basicphysics and measurement inanesthesia.Davis,.Pual,.Kenny,.Gravin,.5thedition.
  + Physicsrelated to anesthesia,.D,.Johan ,. 2NDedition.

## ANS‐604 COMMUNITYMEDICINE CreditHours :(2+0)

**Course objective:**

* + Studentsareexpectedtounderstandtheknowledgeregardtocommunitybasehealth problems,communicable andnon‐communicable diseases, apply knowledge in practice.
  + Tohighlightthesignificanceofthedisciplineofcommunitymedicineinmedicaland applied social sciences regarding itshistory applicationsanddevelopment.

## Course Contents:

Basicdefinition,primaryhealthcare,healtheducationanditsmethods,personalhygiene,dental hygiene,nutrition,watersupply,WHOcriteriaforsafewater,sanitation,motherandchildhealth (MCH),familyplanning,immunization,mentalhealth,drugabuse,commoncommunicable diseases,airpollutionandmeasurestocontrolit,commonvectorofdiseasesandmethodsto hamper them.

## RECOMMENDED BOOKS:

* + IlyasAnsari’scommunitymedicine(TextBook)byIlyasandAnsari2003publishedby Medical divisionUrduBazzar Karachi
  + KPark’scommunitymedicine(ReferenceBook)byKPark2003PublishedbyBanarsideBhanot Jaipur India.

## MLT‐‐604 HematologyII(Non‐MLT) Credit Hours:3(2+1)Course Objectives:

* + To introduce the studentsaboutthebasic conceptsin Hematologyandacquireskillin practicalworkto produce ateam ofMedicalTechnologistssteepedinknowledgeof Pathology.
  + To equipMedicalTechnologistswithlatestadvancementsinthefieldofhematology.

## Course contents:

Ironmetabolism,introductiontoirondeficiencyanemia,differentstagesanddiagnosis, introductiontothalassemia,classification,pathophysiologyanditsdiagnosis,introductionto Sidroblasticanemia,etiologyanddiagnosis,folatandvitaminB12metabolism,introductionto megaloblasticanemia,etiologyanddiagnosis,introductiontoG6PDdeficiencyanemia, pathophysiologyanddiagnosis,introductiontosicklecellanemia,pathophysiologyand diagnosis, introduction to hereditaryspherocytosis, pathophysiology anddiagnosis,introduction tohemolyticanemia,Immunehemolyticanemia,nonimmunehemolyticanemia,aplastic anemia, etiology and diagnosis. ABOand Rh D group system, kellbloodgroupsystem,kedblood groupsystem,duffybloodgroupsystem,donorselectioncriteria,phlebotomyofdonor,blood products,preparation,storageanditsimportance,hemvigilanceinbloodbank,crossmatch, typesofcrossmatch,procedureanditsimportance,bloodgroupinganditsimportance,coomb,s test,typesandimportance,introductiontohemolyticdiseaseofnewborn,types, pathophysiology,diagnosisandmanagement,hemolytictransfusionreactionsandmanagement.

## Practical:

1. ABObloodgrouping(ForwardandReverse grouping)
2. Rh Blood grouping
3. Antibodies screening
4. Cross matching (Major and Minor)
5. Coombstests(Direct and Indirect)
6. Separationofdifferent bloodcomponents
7. DuTest

## Recommended books

* + Essential of Hematology,A.VHoff Brand,6th edition 2006
  + ClinicalHematology,G.CDegrunchi,5thedition2002
  + PracticalHematology,Dacie J.V. 10thedition2012

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| 5THSEMESTERCOURSES | Coursecode |
| 1.PHARMACOLOGY RELATED TO ANESTHESIA | ANS‐605 |
| 2. ANESTHESIAEQUIPMENT | ANS‐606 |
| 3.HISTROY TAKEING PRE‐OPERATIVE ASSESMENT & MEDICATION POST‐OPE CARE | ANS‐607 |
| 4.ANESTHESIA AND CO‐EXISTING DISEASES | ANS‐608 |
| 5. CRITICAL CARE | ANS‐609 |
| 6. LEADERSHIPAND MANAGEMNT | ANS‐610 |

## ANS‐605 PHARMACOLOGYRELATED TOANESTHESIA Credithour: (2+1)

**Course objective:**

* + Students are expected to understand pharmacodynamics and kinetics ofanesthetic agents and its application in anesthesia practice.
  + To demonstrate abilitiesof preparation of dosages as per requirement of the individual and manage complications arise as consequences of anesthetic agentadministration.

## Course contents:

Narcoticanalgesic,pharmacokinetics,pharmacodynmics,Opioidssreceptors,Classificationof opiods,Non‐narcoticanalgesics,Localanestheticsdrugs,intravenousanestheticagents, inhalationalanestheticagents,musclerelaxants,reversalagents,anti‐emeticdrugs,anxiolyticdrugs, emergency drugs.

## Practicals:

1. Preparationanddosageof drugsrelevant toanesthesia
2. Labeling ofdrugs
3. Construct emergencytrolley
4. Checkout date of expire
5. color ofthedrugsand variation

## RecommendedBooks:

* + Anestheticpharmacology.Evers,.Alexs,.&Maze,.Mervyn,.kharasch,.D,.even,.2ndedition.
  + Principles and practice of pharmacology for anesthesia.Calvey,.Norman&William,.Norton,.5thedition.
  + Textbook ofAnesthesia.Aitkenhead,.Alan,.R,. 5THedition.
  + Lippincott'spharmacology.Howland,.Richard,.D,.&Mycek,.Mary,.J,.3rdedit.
  + Clinicalanesthesiology.Morgan &Mikhail’s,.5THedit.

## ANS‐606 ANESTHESIAEQUIPMENT CreditHour: (2+1)

**Course objective:**

* + - Students are expected to understand theworkingprinciples varioustoolsusefor anesthesia provision,toensuresafepractice.
    - To demonstrate abilitiesin managing technical fault arise intra‐operatively and correct thecalibrationof different anestheticinstruments/equipment.

## Course contents:

Anesthesiamachineitsdifferentparts,workingprinciples,medicalgassupplydevices,vaporizers, pulseoximeter,facemasksandlaryngoscope,breathingcircuts,anesthesiaventilatorand workingprinciples,monitoringdevices,manualresuscitationbags,defibrillatoranditsworking principles,methodsofautoclaving,glucometer,nervestimulator,laryngealmaskairway,endo trachealtubes(ETT),airways(oralandnasal),suctionmachine,infusionpump,reservoirbags, resuscitatorbags,thermometer,spagymometer,stethoscope,oxygenpuritymeter,Operation theatertable,flexibleendoscope,intravenouscannulas,spinalneedle,epiduralcatheter,Magill gag,Magill incubatingforceps, latest technology.

## Practicals:

1. Arrangement of anesthesia Machine
2. AnesthesiaMachinesafetysystem
3. Sterilization of anesthesia equipment
4. Arrangement of anesthesia breathing circuits
5. Use of stethoscope and blood pressure apparatus

## RecommendedBooks

* + - Anesthesiaequipmentprinciples and applications.Ehrenwerth,.jan,.Eisenkraft,.james,.Berry,.james,.2ndedition.
    - Manualofanesthesia.K,.Arun,.4thedition.paulJaypee brothersmedical publisher(p) Ltd.
    - EssentialofAnesthesiaequipment.Sakaih,.Bahalal,.&Stacey,.Simon,.3rdedi.
    - Clinicalanesthesiology.Morgan &Mikhail’s,.5THedit.
    - Textbook ofAnesthesia.Aitkenhead,.Alan,.R,. 5THedition.

## ANS‐607 PRE‐OPERATIVE HISTORY, PREPARATION&POST–OP CARE C/Hr:(2+1)

**Course objective:**

* + - Students are expected to understand varioushealthproblemandtheir negative impacts on thepracticeof safeanesthesia.
    - To demonstrate abilitiesof predicating morbidity and mortalityandutilizetheirskills and knowledgetominimizesuchimpacts.

## Course contents:

Historytaking,physicalexamination,systemicexamination,laboratoryinvestigation,predication ofpre‐operativemorbidityandmortality,predicationofspecificeventsariseinter‐operatively, patientpreparation,anesthesiaequipmentpreparation,medicationrequirespre‐operatively, post‐operativeairwaycare,painmanagement,cardiovascularsystemstability,renalsystem stability.

## Practicals:

* 1. Taking historyin surgical ward for electivecase
  2. History taking in surgical Accident &Emergencydepartment
  3. Preof equipment andanesthesiamachinepreparations
  4. Develop various predicating risk scale for patienthealth related problems
  5. Special attention to check list of the patient
  6. Airwayexamination
  7. Riskassessment

## RecommendedBooks:

* + - Pre‐operative assessment and Pre‐operative management. Radford,.Mark,.
    - Pre‐operativeassessment &Mnagemnent.Sweitzer,.Bobbie,.Jean,.2ndedition.
    - Evidence‐basedPracticeofAnesthesialogy.Fleisher,.A,.lee,.3rdedition.
    - Textbook ofAnesthesia.Aitkenhead,.Alan,.R,. 5THedition.
    - Clinicalanesthesiology.Morgan &Mikhail’s,.5THedit.
    - Apracticeof anesthesialogy.Healy,.E,.J,.Thomas,.7thedition.
    - Fundamentalof Anesthesia.Smith,.Tim,.Pinock,.Colin,.line,.Ted,.Johan ,.Robert,.3rdedition.

## ANS‐608 ANESTHESIAANDCOEXISTING DISEASES CreditHour:2+1

**Course objective:**

* + - Students are expected to understand common diseases and its negative impacts in anesthesia practice.
    - To demonstrate abilitieswhich minimize morbidity and mortalityin suchapatients.

## Course contents:

DiabetesMellitus,Hypertension,Ischemicheartdisease,Arrhythmia&heartblocks,Obesity,Shock,Chronicrenalfailure,chronicliverdisease/failure,hematologicaldisorder,Epilepsy,cerebralvascularaccident(CVA),bronchialasthma,Thyroiddisease,pheochromocytoma,COPD,pneumonia,upperrespiratorytractinfection(UTI),myastheniagravis,pulmonaryedema,pregnancyassociateddiseases,renaldisorder,(fluidandelectrolyteimbalance,shiftedtocriticalcare),Respiratorytractinfection,acromegaly,rheumatoidarthritis,alcoholabuse,obstructivesleepapnea,hemophilia,spinalcorddisorder.

## Practicals:

1. Calculate dosage of insulin for patient intra‐operatively
2. Determine ischemic heart diseases throughECG interpretation.
3. Settingofventilatormodesfor various respiratory diseases
4. Compilationofdatarelatedtoblood disorders
5. Collection ofelectrolytedisturbancedata in various renal diseases.
6. Collectionofdatarelevantto liverabnormalMedical Biochemistry

## Recommended books:

* + - Anesthesiaand co‐existing diseases. Robertal.hines,.6thedition.
    - Evidence‐basedpracticeofanesthesialogy.fleisher,.a,.lee,.3rdedition.
    - Textbook ofanesthesia.Aitkenhead,.alan,.r,.5thedition.
    - Clinicalanesthesiology.Morgan &mikhail’s,.5thedit.
    - Apracticeof anesthesialogy.healy,.e,.j,.thomas,.7thedition.
    - Fundamentalofanesthesia.Smith,.tim,.Pinock,.colin,.Line,.ted,.johan ,.robert,.3rdedition.

**ANS‐609 CRITICAL CARE credithour2+1**

* Studentsareexpectedtounderstandvariouscriticalcardiovascularsituations,categorizethepatient,accesscriticallyillpatient,andknowaboutpharmacologicalintervention‐mechanicalprocedurenecessarytostabilizethepumpingsystemofthehumanbody.

**Coursecontents:**

Anintroductiontocriticalcare,Shock,Resuscitationinintensivecareanoperationtheater,Cardiovascularmonitoringincriticalcare,CardiovascularinvestigationofthecriticallyIll,HematologicalAspectsofcardiovascularcriticalcare,CardiovascularsupportPharmacological,Arrhythmias,Mechanicalheartfailuretherapy,Careofthehigh risk patient undergoing surgery ,Commoncomplications of cardiovascular criticalillness,Acutecoronarysyndromesandmyocardialinfarction,Cardiogenicshock,Aorticdissection,Emergencymanagementofcardiactrauma,Hypertensivecrises,Endocrineproblemsandcardiovascularcriticalcare,fluidandelectrolytes,acidandbasebalance

**Practicals:**

1. Assessmentofshockanditstypes
2. Assessmentofarrhythmias
3. Managementofshock
4. Managementofarrhythmias
5. ManagementofCardiacarrest
6. ManagementofacuteMyocardialinfarction
7. ManagementofHypertensivecrisis
8. Analysisofarterialbloodgases
9. ManagementofCardiactraumaandaorticdissection

**Recommendedbooks:**

* Principlesofcriticalcare.Hall,.schmidt,.andwood,s,.4thedition.
* Principleofcriticalcare.Farokh,.erach,.udwadia,.3rdedition.
* Criticalcaremanual.wilson,.francis,.robert,.2ndedition.
* CardiovascularCriticalCare.MarkJ.D.Griffiths,.JeremyJ.CordingleyandSusanna.,010BlackwellPublishingLtd.
* Rosenemergency medicine manual.Adams,.Barsan,.Biros,.Danzl,. 5thedition.

## ANS‐610 LEADERSHIP AND MANAGEMENT Credit hour: (2+0)Course objective:

* Students are expected to understand various leadership models, stylesof leadership, to gain the expertise to maximize resultwithminim effort, toutilize the resourcesinskill full mannerand ensurehuman betterment and justice.

## Course contents:

Introductionofleadership,theories,processmodel,skillofleadership,principlesofleadership, emotionalintelligence,professionalism.introductionofmanagement,scopepolicymaking, procedureandmethodofplanning,limitationofplanning,importanceoforganization,line relationship,staffrelation,functionalrelation,committeeorganization,motivationandtheir theories,motivationaltechnique,commutation,Controlling,spanofcontrol,factorlimiting effectivecontrol,supermanagement,generalmanager,middlemanager,supervisor,planning andcontrollingrelationship,managementcontrolprocess.budget,principlesandtechniqueof co‐ordination, personalmanagement,staffingandworkdistributiontechnique,recruitmentand selectionprocess,complaintsandgrievances,terminationofemployee,healthandsafetyof employee,financialmanagement,profitmaximation,returnmaximation,short,middle,long term financing,

## Recommended books:

* The artof medical leadership. Suzan Oran. ScottConrad
* Strategic management.Ritson,.neil
* Management basics.Quinn,.susan,.
* Emotional intelligence.MTD training
* OnBecomingALeader.Bennis,.warren,.4thedition.
* HowTo WinFriends&Influnce.Kouzes,.M,.james,.&Posner,.Z,.barry,. 5thedition.

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| 6THSEMESTERCOURSES | Course code |
| 1.DIFFERENTTYPES OFANESTHEISA | ANS‐611 |
| 2.ANESTHESIA RELATED COMPLICATIONS  &THEIRMANAGEMNT | ANS‐612 |
| 3.ANESTHESIA FOR CARDIOTHORIC SURGERY | ANS‐613 |
| 4.ANESTHESIA FOR NEURO,EMERGENCY AND GERIATRIC SURGERY | ANS‐614 |
| 5.RESEARCHMETHODOLOGY | PMS‐621 |
| 6.BIOSTATICS | PMS‐622 |

## ANS‐611 DIFFERENT TYPESOFANESTHESIA Credit Hour(2+1)

**Course objective:**

* Students are expected to understand various anesthetic procedures, build specific anatomicalground need for local blocs, instill the confidencetohandleproblemsand overcomethecomplication bornasconsequencesofvariousanestheticprocedure, to know about the materialuse invarious blocs and anesthetic procedure.

## Course contents:

Definitionofanesthesia,Regionalanesthesiaera,Intravenousanesthesiaera,Modernanesthesia era,,Generalanesthesia,retrogradetracheal intubation,totalintravenous anesthesia, anesthesiawithketamine,subarachnoidandepiduralanesthesiaandanalgesia,bier,sblock, axillaryblock,ankleblock,caudalblock(adultandpediatric),centrallineplacement,cervical plexusblock,digitblock,femoralblock,penileblock,sciaticnerveblock,supraclivicalblock, regional anesthesia for thorax,fieldblock, surface anesthesia

## Practical’s:

1. Understandingvariousspinalneddles
2. Use of localanesthetic agents and quantity require as per the need
3. Enlist the complications observedby the candidate during theirclinical rotation
4. Expert in the reliabilityof different instrument in use

## Recommendedbooks:

* Peripheralnerveblocks.Hadzic,.admir,.2ndedition.
* Ultrasoundguided regional anesthesia.Grant,.A,.stuart,.&Auyong,.B,.david.2ndedition.
* Evidence‐basedPracticeofAnesthesialogy.Fleisher,.A,.lee,.3rdedition.
* Textbook ofAnesthesia.Aitkenhead,.Alan,.R,. 5THedition.
* Clinicalanesthesiology.Morgan &Mikhail’s,.5THedit.
* Apracticeof anesthesialogy.Healy,.E,.J,.Thomas,.7thedition.
* FundamentalofAnesthesia.Smith,.Tim,.Pinock,.Colin,.line,.Ted,.Johan ,. Robert,.3rdedition.

## ANS‐612 ANESTHESIACOMPLICATIONSAND THEIRMANAGEMENT credit H (2+1)

**Course objective:**

* + Students are expected to understand various complications andunwanted event emerged intra operatively, post operatively and its proper managementto ensure patient safety.

## Course contents:

Lryngospsam,bronchospsam,pneumothorax,atelectasis,difficultintubation,injuryduringairway management, one lung intubation, aspiration of gastric content,hiccups,hypotension,hypoxemia,aponea,hypercapneia,hypertension,bradycardia,tachy cardia,arrhythmias,myocardialinfraction, hemorrahage, embolus,awreness, central nervous systemischemia,Malignanthyperthermia,hypersensitivity,localanesthestictoxicity,ophthalmic injury, thermal and electric injury,micelleneous,cholineapnea,

## Practicals:

* 1. Identification of laryngospasm and its management
  2. Maintenance of propersupply of medical gases
  3. Measurement of partial pressure ofcarbon dioxide through capnograph
  4. Electrical device and its safe use
  5. N/G tube placement in case of full stomach patient
  6. Maintenance ofemergency tray
  7. Instrument need foremergencychest intubation

## Recommendedbooks:

* + Clinicalanesthesiology.Morgan &Mikhail’s,.5THedit.
  + Textbook ofAnesthesia.Aitkenhead,.Alan,.R,. 5THedition.
  + Anesthesiaand co‐existing diseases.Roberta L.Hines,.6THedition.
  + Evidence‐basedPracticeofAnesthesialogy.Fleisher,.A,.lee,.3rdedition.
  + Apracticeof anesthesialogy.Healy,.E,.J,.Thomas,.7thedition.
  + Fundamentalof Anesthesia.Smith,.Tim,.Pinock,.Colin,.line,.Ted,.Johan ,.Robert,.3rdedition

## ANS‐613 ANESTHESIAFORCARDIOTHORIXIC SURGERY CreditHour2+1

**Course objective:**

* + Students are expected to understand relevant principles, applyknowledge in practice, and to demonstrate abilities in the anesthesiamanagement of cardiothoracic surgery. Theseinclude:

## Course contents:

NYHAclassification,arrhythmias,angina,dysponea,echocardiography,angiography,monitroing

andpreparation,careanduseofarterialandvenousline,anesthesiaforopenheartsurgery, transporttoICUanditsmanagement,chesttubemanagement,pulmonaryfunctiontest,pre‐ operativepreparationandmedication,checklist,useofdoublelumentube,monitoringandpain management,extubationandtransferringtoICU,sorethroat,nauseaandvomiting,neurological complication,neurologicalcomplications,ocularandauditorycomplication,headacheand backache andvascular complication.

## Practicals:

1. Perfusionmachineanditssignificanceforanesthesia
2. Cardiologicdrugs and dosage
3. Infusion pump and itssignificance
4. Double lumen tube and its use
5. Need foronelung ventilation
6. Reducingdeadspace inanesthesiacircuit

## Recommended books:

* + Cardiovascularandthoracicanesthesia.Gothard,.john,.Amdrea,.kelleher& Haxby,.eliuabeth,.2ndedition.
  + Anesthesiafor cardiac surgery.DiNardo,.A,.james,.&Zvara,.A,.David,.3rdedition.
  + Pediatriccardiac anesthesia.Coral,.I,.lake,.&Peter,.D,.Booker,.4thedition.
  + Cardiacanesthesia.jr,.Hensely,.A,.Frederick,.Martin,.E,.Donald,.& Glenn,.p,.Gravlee,.5thedition**.**
  + Thoracicanesthesia.Kaplan,.A,.joel,. &Slinger,.D,.peter,.3rdedition.

## ANS‐614 ANESTHSIA FOR NEUROSURGRY/EMERGENCY/GERIATRIC C/Hour2+1

**Course objective:**

* + Students are expected to understand relevant principles, applyknowledge in practice, and to demonstrate abilities in the anesthesiamanagement of neurosurgery,emergency and geriatric.

## Course contents:

Glasscowcomascale,premedication,investigation,checklistofequipemnt,inductionof anesthesia,useofreinforceETT,positinginneurosurgery,intracranialpressure,airembolism, reversalofthepatient,transferringtoICU,resuscitationofshockpatientandtheircirculatory management,rapidsequenceinduction,physiologyofaging,diseasesofaging,nervoussystem, geriatric pharmacokinetic and pharmakodynamic,nervoussystem dysfunction,

## Practicals:

1. Setting and maintenance of OT table
2. Ensure proper I.V line
3. Use of sevoflurne vaporizer in neurosurgery
4. Exertionofcricoidpressure in emergency surgery
5. N/Gtubeplacement
6. Bloodtransfusion
7. Arrangement of colloid and crystalloidfluid
8. Maintenance and ensure availability of defibrillator
9. Urethral catheterplacement
10. Suctionmachinefunction surety
11. Labeling ofdrugs and dosage preparation in aged patient

## Recommended books:

* + AnesthesiaEmergencies.Ruskin,.J,.keith,.&Rosenbum,.H,.stanley.
  + A Practical Approach to Anesthesia for Emergency surgery.Manju,.N,.Gandhi,.Malde,.D,.Anila,.Amala,.G,.kudalkar,.Karnik,.S,.Hemangi.
  + ClinicalAnesthesia inNeurosurgery.Frost,A,.M,.Elizabeth,.2ndedition.
  + AppliedGeriatric Anesthesia.Paul,.kumar,.Arun,.7thedition.

## PMS‐621 RESEARCHMETHODOLOGY Credit hours: 3(2+1)

**Course Objectives:**

After successful completion of this course, students will be able to,

* Recognize the basic concepts of research and the research process.
* Develop understanding on various kinds of research, objectives of doing research, research designs and sampling.
* Conduct research work and formulating research synopsis and report.

**Course Contents:**

Introduction toresearch(in simpletermandascientific term),conceptofresearch,why doneed research,advantageandscopeofresearch,identificationofresearchneedsanditsqualities, Typesofresearch;Qualitative,Quantitativeandtheirsubtypes,ResearchprocessIntroduction (Deciding,formulatingresearchquestions,planning,conductofstudy,datacollection,processing andanalysis,Researchwritingandreporting),Literaturereview(What,why,wherefrom,how andqualitiesofgoodliteratureanditsuse),Writingaresearchproblem/questionandselection ofthetitleofstudy,Identificationofvariousresearchvariables,Hypothesisitstypes,formulation andtestingofhypothesis,Researchstudydesignsusedinqualitativeandquantitativestudies, Designingofdatacollectiontools/questionnaires,Selectionofappropriatesamplingtechnique invariousstudydesigns,Conceptofvalidityandreliability,Researchproposalwriting,Ethical principlesofResearchandtheirexamplestoapplythoseprinciples,Datacollectionand processing/displayingtechniques,Writingofresearchreport(Chaptersinresearchreport/thesis, Outline/Abstract of research, Referencing and Bibliography0

## Practical Work:

* + - Literature Search
    - Surveyconduct
    - Citation andReferencing
    - Proposalwriting
    - Data collectionanddisplaying

## Recommended Books:

* ResearchMethodologyby Ranjit Kumar3rdEdition
* Foundationof ClinicalResearch byPortneyLGWalkais MPin1993, Publisher by Appleton and lauge USA
* Aguideto ResearchMethodology,BiostatisticsandMedical writing by college of physicians and surgeons Pakistan by WHO collaboration center
* Health system research project byCorlienMVarkerisser,IndraPathmanathan, Ann Brownleein1993 by InternationalDevelopmentResearchCenter in New Dehli, Singapore.

## PMS‐622 BIOSTATISTICS CreditHours:3(2+1)

**Course objectives:**

After successful completion of this course, students will be able to,

* State the principal concepts about biostatistics; collect data relating to variable/variables.
* Examine and calculate descriptive statistics from collected data.
* Interpret data via binomial distribution and the concept of sampling.
* Apply hypothesis testing via some of the statistical distributions.

## Course Contents:

IntroductiontoBiostatisticsanditstypes; Descriptive andinferentialstatistics,Measureof centraltendency,Measureofdispersion,Statisticaldata,PresentationofDatabyGraphs,Data anditstypes,Datacollectiontools,DataanalysistoolsHealthRelatedData,Presentationof quantitativedata**,**Theconceptofsampling,typesandmethodsofsample,sampledistribution, errorofsampling,Variableanditstypes,Testsusedinbiostatisticstheiruseandinterpretation( t‐tests,Chi‐squareANOVA,Regressionandcorrelation)Hypothesisformulationandtestingon thebasisofstatisticsandstatisticaltests,Sampleandpopulation,Basicconsiderationsin sampling,randomsampling,stratifiedrandomsampling,clustersampling,systematicsampling, determinationofsamplesize,eliminationofsamplingbias**,**twotypesoferrors,acceptanceand rejection Regions,Towsided andone sided tests, general steps in hypothesis testing,test about means, confidence interval formean, Preparingdataanalysisby varioussoftware, UseofSPSS

## Practicals

* + Manual calculation related to measure of central tendency andmeasure of Dispersion
  + Defining variables in SPSS
  + Entry of data in SPSS
  + Analysisofdata inSPSS

## Recommended Books:

* + - Aquide toresearchmethodology, biostatisticsandmedicalwritingbycollegeof physiciansandsurgeonsPakistan by WHOcollaborationcenter
    - Reading understanding multivanant statistics giimm LG Yard AD PR, publisher American Psychologicalassociation
    - Ilyas Ansari’s community medicine (Text Book) byIlyasandAnsari 2003publishedby Medical divisionUrduBazzar Karachi

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| 7THSEMESTER COURSES | Course code |
| 1.ANESTHESIAFOR G/SURGERY/ORTHOPADEIC ANDUROLOGICAL PROCEDURES | ANS‐615 |
| 2.ANESTHESIAFOR EYESURGICALPROCEDURES | ANS‐616 |
| 3.ANESTHESIAFOR EAR,NOSE,THORATSURGERY | ANS‐617 |
| 4.ANESTHESIAFOR OBSTERTIC&PADEATRIC SURGERY | ANS‐618 |
| 5.ELECTROCARDIOGRAPHFOR ANESTHETIST | ANS‐619 |
| 6.EPIDIOMOLOGY | PMS‐623 |

## ANS‐615ANESTHESIAFOR ORTHOPEDICS/UROLOGYAND/GENERALSURGERYC(2+1)

**Course objective:**

* Students are expected to understand relevant principles, applyknowledge in practice, and to demonstrate abilities in theanesthesiamanagement of orthopedic, urological and generalsurgical procedure.

## Course contents:

Pre‐operativeassessment,pre‐existingmedicalproblems,physicalexamination,choiceof anesthetictechnique,regionalanesthesia,intraandpost‐operativeanalgesia,specialpositioning fororthopedicsurgery,riskofperipheralnerveinjury,bloodloss,intraoperativehypotension, venousthrombosis,spinalcordinjury,trachealintubation,respiratoryconsideration, cardiovascularconsideration,succinylcholinehyperkalemia,temperaturecontrolandminting spinalcordintegrity,kneearthroscopy,ankleandfootsurgery,pediatricorthopedicsurgery, tourniquetapplication,useofmethylmethacrylate,fiberopticcystoscopy,transurethral resectionofprostate,TURPsyndrome,transurethralresectionofbladdertumor,nephrectomy, laparoscopic urological surgery, renal transplant

## Practicals:

1. Spinal blockpreparation
2. airwayequipment
3. Mentoringofagedpatientinparticular
4. Use ofdefibrillator
5. Positioningofpatientin prolongsurgery
6. Bloodtransfusion

## Recommended books:

* Evidence‐basedPracticeofAnesthesialogy.Fleisher,.A,.lee,.3rdedition.
* Textbook ofAnesthesia.Aitkenhead,.Alan,.R,. 5THedition.
* Clinicalanesthesiology.Morgan &Mikhail’s,.5THedit.
* Anesthesiaand co‐existing diseases.Roberta L.Hines,.6THedition.
* Apractice ofanesthesialogy.Healy,.E,.J,.Thomas,.7thedition.
* Fundamentalof Anesthesia.Smith,.Tim,.Pinock,.Colin,.line,.Ted,.Johan ,.Robert,.3rdedition.

## ANS‐616 ANESTHESIAFOREYE SURGERY credithour(2+1)Course objective:

* + Students are expected to understand relevant principles, applyknowledge in practice, and to demonstrate abilities in the anesthesiamanagement of eye surgery and theuse oflatesttechnology. Theseinclude:

## Course contents:

Understanding,Anatomyandphysiologyofextremesofage,Anatomyoforbitandcontents,

Physiologyofintraocularpressure,Ocularperfusion,Eyereflexes(oculo‐cardiac,oculo‐ respiratory,oculo‐emetic),extraocularmuscles,bloodvessels,lacrimalapparatus,Local anestheticagentsforeyesurgery,Otherdrugsforeyesurgery,forexample,topicalagents, vasoconstrictors,mydriatics,miotics,andagentstoreduceintraocularpressure.general anesthesiaforeyesurgeryincluding:examinationunderanesthesia,Lasereyesurgery, Intraocularsurgery,extra‐ocularsurgery,retinaldetachment,Plasticandorbitalsurgery, emergencyeyesurgeryanduseofsuxamethoniuminpenetratingeyeinjury,Monitoring, Postoperativecare,management ofnauseaandvomiting, principlesofregionalretrobulbarand peribulbarblockandchoosingbetweengeneralandregionalanesthesiatechniques,Sedationfor eye procedures, principles of anesthesia for day,Pediatric considerations.

Practicals:

* 1. Pre‐operative preparation of the patient
  2. Equipmentpreparation
  3. Airway devices
  4. Monitoring devices adjustment
  5. Labelingofanesthesia drugs

## Recommended books:

* + Opthalmicanesthesia.C.Dodds,G.Fanning.C.kumar.
  + Anesthesia forophthalmicsurgery.Mostafa,.Morsy,.Sobhy.
  + Anesthesiaand co‐existing diseases.Roberta L.Hines,.6THedition.
  + Evidence‐basedPracticeofAnesthesialogy.Fleisher,.A,.lee,.3rdedition.
  + Textbook ofAnesthesia.Aitkenhead,.Alan,.R,. 5THedition.
  + Clinicalanesthesiology.Morgan &Mikhail’s,.5THedit.
  + Apracticeof anesthesialogy.Healy,.E,.J,.Thomas,.7thedition.
  + Fundamentalof Anesthesia.Smith,.Tim,.Pinock,.Colin,.line,.Ted,.Johan ,.Robert,.3rdedition.

## ANS‐617 ANESTHESIAFOREAR,NOSE,THROTSURGERY creditH( 2+1)

**Course objective:**

* + Students are expected to understand relevant principles, applyknowledge in practice, and to demonstrate abilities in the anesthesiamanagement of ear, nose and throat (ENT) surgery.

## Course contents

Pre‐operativeairwayassessment,examinationunderanesthesiatonsillectomyand adenoidectomy,includingquinsyandpostoperativebleeding,microlaryngoscopy,radicalhead andnecksurgery.laryngectomy,pharyngolaryngectomy,Lasersurgery,Nasalandsinus operations,Parotidtumorsurgery,myringoplasty.,Middleearsurgery,microsurgeryoftheear, managingpartialairwayobstructionincluding,epiglottitis,foreignbodies,laryngealtumors, oropharyngealcystsandabscesses,electiveandemergencytracheostomy.Pediatricproblems, for example,relating todisease, airway, larynxand craniofacialdisorders, post‐operativecare.

## Practicals:

1. Preparation of patient
2. Preparation of equipment
3. Airway management
4. Drugs preparation
5. Post‐op airway management
6. Post‐op bleeding management in tonsillectomy
7. Patient positioning

## Recommended books:

* + Textbook ofAnesthesia. Aitkenhead,Alan, 5THedition.
  + Clinicalanesthesiology.Morgan &Mikhail’s,.5THedit.
  + Anesthesiaand co‐existing diseases.Roberta L.Hines,.6THedition.
  + Evidence‐basedPracticeofAnesthesialogy.Fleisher,.A,.lee,.3rdedition
  + Apractice ofanesthesialogy.Healy,.E,.J,.Thomas,.7thedition.
  + Fundamentalof Anesthesia.Smith,Tim,.Pinock,Colin,.line,.Ted,.Johan ,.Robert,.3rdedition.

## ANS‐618 ANESTHESIAFOROBSTETRIC ANDPADEATRIC SURGERY Credit hour2+1

**Course objective:**

* + Students are expected to understand relevant principles, applyknowledge in practice, and to demonstrate abilities in theanesthesiamanagement of Obstetric and pediatric surgeries.

## Course contents:

Differencebetweennormalandpregnantlady,anesthesiafornon‐obstetricduringpregnancy, riskforanesthesia,precautiontotake,regionalanesthesia,epiduralanalgesia,anesthesiafor pre‐eclampsia,APGARscore,induction,maintenanceandrecovery,resuscitationofthenew born, manual removal of placenta,APH, PPH, rupture uterus, ectopic pregnancy, theater setting forpediatric,checklist,premedicationandintubation,reversalandextubationproblem,pain managing.

## Practicals:

1. Placementof N/G tube
2. Positioningin c/section
3. Airway management gadgetsanditsarrangement
4. Spinal trolley setting
5. Medical gases supply surety
6. Adjustmentof ventilator as per patient minute ventilation
7. I.vcannultioninchildren
8. Selectionof ETT size asperpatientage
9. Safety measure incommunicable diseases
10. Advancelifesupport drill

## Recommended books:

* + ObstetricAnesthesiaPrinciplesandPractice.
  + David,.H,.chestnut,.Cynthia,.A,.Wong,.Lawrence,.C,.Tsen,Warwick,.D,.Nagan,.kee,.5thedition.
  + Obstetric Anesthesia.Brenda,.A,.Buckin,.David,.R,.Gambling,.& David,.wlody,.
  + A practice of anesthesia for infants and childern.Cote,.J,.charles,.Leman,.Jerrold

&Anderson,.Brian,.5thedition.

* + Evidence‐BasedObstetricAnesthesia.Halpern,.H,.Stephen,.&Douglas,.M,.Joanne,.3rdedition.
  + Handbook ofPediatricAnesthesia.Houck,.J,.Philipp.Manon,.Hache,.&Sun,.S,.Lena,.

## ANS‐619 ELECTROCARDIOGRAPHYFORANESTHETITS Credit Hours:3(2+1)

**Courseobjectives:**

* + To describe the basic concepts of EKG
  + Torecognizethebasicelectro‐physiologyusingEKG
  + To computedifferent basic technical ECG abnormalities
  + To infer different types of arrhythmias
  + To identify different heart pathologiesonthe basisofEKG
  + To relate the EKG abnormalities withtheheart andlungpathologies

## Course Contents:

Conductionproblems.heartrhythm,waveabnormalities(P,QRS,T),AtrialandVentricular Hypertrophy,TWaveAbnormalities,ElectricalAxisandFascicularBlock,,Conditions, Arrhythmias,ECGofdifferentMyocardialinfarctions,EKGofDifferentcongenitalaswellas acquiredHeartpathologies;Aorticdisease, valvulardiseases,Pericardialdisease, howtousethe ECG.

## Practical:

1. Finding heartrate,Rhythm,axisandintervals
2. Different types of EKG waves and correlation with different heart chambers
3. Interpretation of different type of arrhythmias
4. Interpretationof Myocardial infarction
5. Interpretationofcardiac chamber hypertrophy andenlargements
6. InterpretationofCardiac myopathies
7. Interpretationofvalvular pathologies
8. Interpretation of different aortic pathologies

## Recommended Books:

* + ECG MADEEASY BY JOHAN R.HMAPTON
  + EKGBYDALEDUBIN6THEDITION
  + ECGMADEEASYBYJHONR6THEDITION
  + RAPIDECGINTERPRETIONBYMR.M.GABRIELKHAN3RDEDITION

## PMS‐623 EPIDEMIOLOGY Credit Hours: 3(2+1)

**Courseobjectives:**

After studying this course the students will be able to:

* + - Explain epidemiologicalterminologies
    - Apply the knowledge tocalculatediseaserisk, prevalenceandincidence
    - Select and choosean appropriatestudydesignin research
    - Explainconfoundingand Biasesin studies
    - Appraise SWOT analysis

## Course Contents:

IntroductiontoEpidemiologyandbasictermsusedinEpidemiology,MeasuresofDisease Occurrence;IncidenceandPrevalence,Incidence, Ratesandits types, Dynamicsof disease transmission,Measurementofdiseasefrequency,risk,rateandproportion,Calculationof: Prevalence,Incidence,Duration,MortalityandMorbidity,StudyDesignOptions,Researchstudy Designs,CaseControlStudy,CohortStudy,ExperimentalStudy,RCT,Meta‐analysisandsystematic review, TheCross‐Sectional Study, Case‐Reports, Sources of Error;ConfoundingandBiases,Odds ratio and relative risk, SWOT analysis, Reliabilityof tests byusing Sensitivityand specificity

## Practical’s:

1. Calculation of Sensitivityand specificity
2. Calculationof Incidence and prevalence
3. Finding riskof disease,rateand frequency
4. SWOTanalysis

## Recommended Books:

* + 1.An\_Introduction\_to\_Epidemiology\_for\_Health\_Professionals
  + Epidemiologyby LeonGordis5thEdition

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| 8th Semester Courses | Course code |
| 1.RESEARCHPROJECT | PMS‐626 |
| 2.SEMINAR | PMS‐627 |
| 3.ANESTHESIAFORDENTALSURGERY | ANS‐620 |
| 4.BIOETHICS | PMS‐625 |

## PMS—626 RESEARCHPROJECT Credit Hours:6(0+6)

**CourseObjectives:**

* Studentswill learn somebasicresearch methodologyand gain knowledgeabout research.
* It will hopefully result insome of presentation or publicationfor the students and will provide a research oriented environment

## Course contents:

During last year each student should select a topic of researchreport with consultation of his/her supervisor and shall prepareandsubmitresearchreportto Khyber Medical University by the end of last year.

## Practical:

A hard copy of researchproject should submit to examination for degree requirements fulfillment.

## PMS—627 SEMINAR Hours:1(1+0)

**Course objective:**

Duringlastyear eachstudent shouldselecta topicofresearch workwithconsultationof his/her supervisor and shall presenthis/her research work through a seminar.

## ANS‐620ANESTHESIA FORDENTAL, MAXILOFICAL,HEAD ANDNECKSURGERYC/H2+1

**Course objective**

* Studentsareexpectedtounderstandrelevantprinciples,applyknowledgeinpractice, andtodemonstrateabilitiesintheanesthesiamanagementofdental,headandneck surgery

## Course contents:

Outpatientdentalprocedures;sedationandgeneralanesthesia,Inpatientdentalsurgery,Dental proceduresonthementallyhandicapped,Dentalproceduresonpatientswithbleedingdisorders, Oralsurgery,Fracturedjaw,MaxillaryfracturesaccordingtotheLeFort,tracheostomy classification,Dentalsepsis,Pre‐operativeairwayassessment.Managementofanesthesiafor majormaxillofacialsurgery,whichmayinvolveprolongedanesthesia,majorbloodloss, hypothermia and multiple procedures, Management of anesthesia for facial trauma: emergency andsemi‐elective,includingfracturedjawandmaxillaManagementofanesthesiaforcancer, plasticandcosmeticsurgeryontheface,headandneck,includingsurgeryforcleftpalate. Thyroidsurgery,Stabilizationofthyroidandparathyroiddisorders,post‐op,thyroidstorm management,Sedationfor headandneck procedures, Post‐operativecare.

## PRACTICALS:

1. Nasal intubation
2. Observation of tracheostomy
3. Airway management inmaxillo facial patient
4. Post‐opmonitoringand airway care
5. Useof equipment indentalanesthesia
6. Local blockobservation

## RECOMMENDED BOOKS:

* Anesthesia for oral and maxillofacialsurgery.shaw,.Ian,.kumar,.chandra,.&Dodds,.christopher,.3rdedition.
* Handbookof localanesthesia.Malamed,.F,.stanely,.6thedition.
* Clinicalanesthesiology.Morgan &Mikhail’s,.5THedit.
* Textbook ofAnesthesia.Aitkenhead,.Alan,.R,. 5THedition

**PMS-625 BIOETHICS CreditHours2(2+0)**

**Course Objectives**

After successful completion of this course, students will be able to,

* Identify ethical issues in medicine, health care and life sciences.
* Describe rational justification for ethical decisions.
* Practice the ethical principles of the Universal Declaration on Bioethics and Human Rights.
* Recognize and distinguish an ethical issue from other issues.

**Course Contents:**

Introduction to bioethics, ethical principles, autonomy , informed consent, intentional non-disclosure , patient self- determination act, the health insurance portability and accountability act of 1996 (HIPAA) privacy and security rules, non-maleficence, slippery slope arguments, beneficence, paternalism, justice, social justice, the patient protection and affordable care act, professional patient relationship, unavoidable trust, human dignity , patient advocacy, moral suffering, ethical dilemmas.

**Recommended Books:**

* Introduction to bioethics and ethical decision making by Karen L. Rich (chapter 2) 2015