



KHYBERMEDICALUNIVERSITYPESHAWAR

AIMSANDOBJECTIVESOFTHECOURSE:

AIMS:

The aim of the 4 years degree programme in Intensive Care Technology is to equip the students with relevant professional knowledge, skills, techniques and ethical values to enable them to apply their acquired expertise at the level between the doctors and the patient for efficient health service delivery.

GENERALLEARNINGOBJECTIVES:

Intensive Care Technology education and training should enable the student to:

- Express the knowledge, technical, non-technical skills in a standardized and reproducible environment.
- Develop the decision power and exercise appropriate judgment skills with matching application.
- Develop administrative skills in developing crisis management plan.
- Develop effective communication skills to perform in working environment effectively.
- Create the expertise in legal implication of emergency cases and application of professional attitude.

SPECIFICLEARNINGOUTCOMES

Following competencies will be expected from a student completing 4 years degree course in Respiratory therapy And intensive care Technology. The student should be able to:

- Demonstrate knowledge of human structure, function, and disease process.
- Develop the knowledge, skills and attitudes necessary to perform safely and accurately all

Basic and advanced life support procedures in emergency /critical care, trauma and

Disaster management etc

- Acquire common sense, attention to detail, prioritizing skills and anticipation of potential problems in the care of the acutely ill or injured patient
- Deliver efficient and competent care to critically ill infants and children.

- Gain experience in the analysis of data and management of acute medical and surgical crisis

Of the patients

- Understand the total patient care in intensive care, including the awareness of support services available and when to activate them.
- Gain experience in the ethical principles and practical management of end-of-life care
- Access appropriate consultations wherever required.
- Maintain sepsis in all such cases requiring an injection or having a contagious disease or operative procedures
- Establish rapport with the patient and related people to decrease their state of crisis
- Direct and coordinate the transport of the patient by selecting the best available method(s) in conjunction with medical command authority/protocol.
- Clearly and concisely deliver educational information to staff in both formal and informal teaching settings.
- Do researches on Intensive Care technology
- Be exposed to and gain understanding of administrative issues in critical care services.

FRAMEWORK FOR BS INTENSIVE CARE TECHNOLOGY

4 years BS Program

<input type="checkbox"/> Total numbers of Credit hours	132(HEC recommended: 124-136)
<input type="checkbox"/> Duration	4 years
<input type="checkbox"/> Semester duration	16-18 weeks
<input type="checkbox"/> Semesters	8
<input type="checkbox"/> Course Load per Semester	15-18 Credit hours
<input type="checkbox"/> Number of courses per semester	4-7

Semester/Year	CODE	Name of Subject	Credits
First	PMS-601	MEDICAL BIOCHEMISTRY-I	4(3+1)
	PMS-602	HUMAN PHYSIOLOGY-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(1+1)
Second	PMS-607	MEDICAL BIOCHEMISTRY-II	4(3+1)
	PMS-608	HUMAN PHYSIOLOGY-II	4(3+1)
	PMS-609	HUMAN ANATOMY-II	4(3+1)
	PMS-610	ENGLISH-II	2(2+0)
	PMS-611	ISLAMIC STUDIES	2(2+0)
Third	PMS-614	PHARMACOLOGY-I	3(2+1)
	PMS-612	G.PATHOLOGY-I	3(2+1)
	PMS-613	MEDICALMICROBIOLOGY-I	3(2+1)
	ICT- 601	INTENSIVE CARE MONITORING-I	2(1+1)
	MLT-601	HEAMATOLOGY-I	3(2+1)
	PMS-615	COMMUNICATION SKILL	2(1+1)
	RRT-601	RESPIRATORYTHERAPY-I	2(1+1)
Fourth	PMS-616	PHARMACOLOGY-II	3(2+1)

	PMS-617	G.PATHOLOGY- II	3(2+1)
	PMS-618	MEDICALMICROBIOLOGY-II	3(2+1)
	ICT-602	CLINICAL MEDICINE	3(2+1)
	RAD-610	DIAGNOSTICIMAGING	2(1+1)
	PMS-619	BEHAVIOURAL SCIENCES	2(2+0)
			16
Fifth	RRT-602	ADVANCES IN RESPIRATORY THERAPYAND INTENSIVECARE	3(2+1)
	ICT-603	TRAUMA INTENSIVE CARE	3(2+1)
	ANE-606	ANESTHESIA EQUIPMENTS	3(2+1)
	ECT-605	BURNS& TOXICOLOGY	3(2+1)
	ICT-604	CRITICAL CARE LABORATORY DIAGNOSTICS	3(2+1)
	ICT-605	APPLIED PHYSICS	2(1+1)
			17
Sixth	ICT-606	SURGICAL INTENSIVE CARE	3(2+1)
	RRT-603	DRUGS RELATEDTOINTENSIVE CAREAND RESPIRATORYTHERAPY	3(2+1)
	ICT-607	INTENSIVE CARE MONITORING-II	3(2+1)
	ECT-609	NEONATAL& PEDIATRIC CRITICAL CARE	3(2+1)
	ECT-610	CARDIOVASCULAR EMERGENCY	3(2+1)
	RRT-604	RESPIRATORY THERAPY-II	3(2+1)

			18
Seventh	ECT-613	OBSTETRICAL CRITICAL CARE-I	3(2+1)
	ICT-608	RECOGNITION AND MANAGEMENT OF ORGAN FAILURE	3(2+1)
	PMS-624	FUNDAMENTALS OF INFECTION CONTROL	2(1+1)
	PMS-623	EPIDEMIOLOGY	2(1+1)
	PMS-622	BIOSTATISTICS	3(2+1)
	PMS-621	RESEARCH METHODOLOGY	3(2+1)
			16
Eight	ECT-615	OBSTETRICAL CRITICAL CARE-II	3(2+1)
	PMS-626	RESEARCH PROJECT	6(6+0)
	PMS-627	SEMINAR	1(1)
	PMS-625	BIOETHICS	(2+0)
	ICT-609	INTENSIVE CARE MANAGEMENT	3(2+1)
		TOTAL – 124-136	15
		TOTAL CREDIT HOURS	134

Total credit hours= 134

HEC recommendation=124-136

LIST OF GENERALCOURSES
(15 Courses)

1. Epidemiology
2. Pharmacology-I
3. Medical Microbiology-I
4. General Pathology-I
5. Medical Microbiology-II
6. Pharmacology-II
7. General Pathology-II
8. Research Methodology
9. Fundamental Of Infections.
10. Diagnostic Imaging.
11. Behavioral Sciences
12. Hematology-I
13. Biostatistics
14. Research Project

Discipline Specific Courses
(19Courses)

1. ICU Monitoring-I
2. Respiratory therapy-I
3. Clinical medicine
4. Advances in respiratory therapy and intensive care
5. Trauma Intensive care
6. AnesthesiaEquipment
7. Burns & Toxicology
8. Applied Physics
9. Surgical Intensive care
10. Drugs related to intensive care and respiratory therapy
11. Cardiovascular Emergency
12. Respiratory Therapy-II
13. Obstetrical Critical care-I
14. Neonatal and Pediatric Critical care
15. Critical care laboratory Diagnostics
16. ICU Monitoring-II
17. Recognition& Management of Organ Failure
18. ObstetricalCritical care-II
19. Intensive care Management

1stSEMESTER COURSES

- 1. MEDICAL BIOCHEMISTRY -I**
- 2. HUMANPHYSIOLOGY-I**
- 3. HUMAN ANATOMY-I**
- 4. ENGLISH-I**
- 5. PAK STUDIES**
- 6. COMPUTER SKILLS**

Course**objective:**

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 content**s:**

Acids,bases,pH and buffers,Biochemical composition and functions of the cell membrane,Transport across the cell membrane,Carbohydrates:Introduction,structure,function,digestion and absorption,Amino acids and proteins:Introduction, structure,function, digestion and absorption, Lipids: Introduction, structure,function,digestion and absorption,Vitamins and minerals,Fluid,electrolyte and acid base balance, Cell signaling and hormone action,Body secretions:Composition and function of saliva,gastric acid(HCL),pancreatic juice,bile, hormones and GI functions

Practica:

1. Blood sample collection for biochemical analysis
2. Preparation and calculation of Solutions
3. Principles of MEDICAL BIOCHEMISTRY analyzers (spectrophotometer, flame photometer)
4. Determination of Cholesterol, Tg, HDL, LDL, sugar, calcium and phosphorus in blood

Recommended**Books**

- Harper's MEDICAL BIOCHEMISTRY Robert K. Murray, Daryl K. Granner 28th edition 2009
- MEDICAL BIOCHEMISTRY by Dr. U. Satyanarayana, U Chakrapani Lehninger Principles of MEDICAL BIOCHEMISTRY, 6E
- Marks' Essentials of Medical MEDICAL BIOCHEMISTRY A Clinical Approach, Second Edition

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 Tissue, 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.

Practical:

- Introduction to microscope
- Bleeding time
- Clotting time
- WBCs count
- RBCs count
- Platelets count
- Reticulocytes count

Recommended Books:

- Essentials of Medical Physiology K Sembulingam, Prema Sembulingam Sixth Edition 2013
- Concise Physiology Dr. Raja Shahzad 1st Edition 2012
- 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

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: Musculoskeletal system (Axial and Appendicular), Axial Skeleton, Different bones of human body, Axial and Appendicular Skeleton, Classification on the basis of development, region and function, General concept of ossification of bones, parts of young bone, Blood supply of long bones. Joints Structural Regional and functional classification of joints, Characteristics of synovial joints, Classification of synovial joints, Movement of synovial joints. Muscular System Part of muscle Classification of muscles (skeletal, Cardiac, smooth) Thoracic wall: Muscles of thorax, Surface Anatomy, Trachea, lungs, pleura, mammary glands (breast), Heart and thoracic vessels. Thoracic cavity: Mediastinum, Lungs, bronchi, blood supply and lymphatic Abdominal wall: Skin, nerve and blood supply, Muscles of anterior abdominal wall. Abdominal cavity: General Arrangement of the Abdominal Viscera, Peritoneum, Omenta, mesenteries, Stomach, blood, nerve, lymphatic supply, Small intestine, blood, nervous and lymphatic supply, Large intestine: blood, nerve and lymphatic supply. The pelvic wall: Anterior, posterior wall, diaphragm. Pelvic cavity: Ureters, urinary bladder Male genital organs, Female genital organs, Muscles of pelvic region, blood supply, nerve supply.

Practical:

- Study Axial, Appendicular skeleton and musculoskeletal system on human skeletal models.
- Study and understanding anatomy of Thorax, Abdomen and Pelvis through:
- Human Models
- Video demonstrations.

Recommended Books:

- Ross and Wilson Anatomy and Physiology in health and illness 11th Edition Waugh Grant.
- Clinical Anatomy (By regions) 9th edition, Richard S. Snell
- BD Chaurasia for general anatomy

Reference Books

- Netter Atlas of human anatomy 5th Edition Saunders.
- Gray's Anatomy for students 2nd Edition Drake Vogal Mitchell.

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: Part of Speech, Tenses, Paragraph writing: Practice in writing a good, unified and coherent paragraph, Précis writing and comprehension, Translations skills: Urdu to English, Reading skills: Skimming and scanning, intensive and extensive, and speed reading, summary and comprehension Paragraphs, Presentations 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.

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

Books Recommended:

- Akbar, S. Zaidi. *Issue in Pakistan's Economy*. Karachi: Oxford University Press, 2000.
- Mehmood, Safdar. *Pakistan Kayyun Toota*, 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.

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 and Window XP/7; MS Office 2007 (Word, Excel, PowerPoint); Internet access and different databases available on the internet; Email.

PRACTICAL

- 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:

- Computer science by Muhammad Ashraf, edition 1st 2010

2ndSEMERTER COURSES

1. **MEDICAL BIOCHEMISTRY-II**
2. **HUMANPHYSIOLOGY-II**
3. **HUMAN ANATOMY-II**
4. **ENGLISH-II**
5. **ISLAMIC STUDIES**

Course objective:

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 content:

Carbohydrates metabolism (Glycolysis, Glycogenolysis, Gluconeogenesis, Glycogenesis, Pentose phosphate pathway, Fermentation and ethanol metabolism, Krebs cycle, ETC, Cori cycle, Glucose alanine cycle), Protein and amino acids metabolism (synthesis and degradation of amino acids, Lipid metabolism (Beta oxidation, Cholesterol metabolism), Nucleotide metabolism (Purine and pyrimidine degradation, uric acid formation), Nutrition (Major food groups, Balanced diet, Metabolic changes in starvation, Protein energy malnutrition, Obesity, kwashiorkor, Marasmus), Clinical diagnostic enzymology: clinical significance of ALT, AST, ALP, GGT, LDH and isoenzymes, CK and isoenzymes, Pancreatic lipase and amylase, cholinesterase, G6PD, ACP, cardiac troponins, ANP, BNP and pro-BNP)

Practical:

- Determination of liver, cardiac, pancreatic enzymes
- Determination of urea and uric acid
- Demonstration of ELISA, CMIA and CLIA instrument

Recommended Books:

MEDICAL BIOCHEMISTRY by Dr. U. Satyanarayana, U Chakrapani

Marks' Essentials of Medical MEDICAL BIOCHEMISTRY A Clinical Approach, Second Edition Harper's Illustrated BIOCHEMISTRY a LANGE medical book twenty-sixth edition

Lehninger Principles of BIOCHEMISTRY, 6E

Mc Graw Hill's Manual of laboratory and diagnostic tests by DENISE D. WILSON, PHD, APN, FNP, ANP

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, haematopoiesis, 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.

Practical

Spirometer
 Electrocardiography
 Blood Pressure Measurement
 Normal and abnormal ECG interpretation
 Pulse rate measurement
 Heart sounds

Recommended Books

- Essentials of Medical Physiology K Sembulingam, Prema Sembulingam 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

Course Objectives:

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, muscles, Blood supply, Nerve supply, lymphatics, **The lower limb** Fascia, Bones, Muscles, Femoral triangle, Blood supply, Nerve supply, Lymphatic supply. **Head and neck** Skull, Mandible, Cranial nerves, cranial cavity, Meninges, Brain, Orbit, Neck, Endocrine System Classification of endocrine glands, Pituitary glands, Thyroid Glands, Adrenal gland and differences between the cortex and medulla.

Practical:

- Study and understand the anatomy of Upper limb, Lower limb, Head and Neck through
- Human Models Video demonstration
- Study radiographs of upper and lower limb.

Recommended Books:

- Ross and Wilson Anatomy and Physiology in health and illness 11th Edition Waugh Grant.
- Clinical Anatomy (By regions) 9th edition, Richard S. Snell.

Reference Book

Netter atlas of human anatomy

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 resources, 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 2. Third edition. Oxford University Press 1986. ISBN 0 19 431350 6.
- 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. 1997. ISBN 0194313506
- Intermediate by Marie-Christine Boutin, Suzanne Brinard and Françoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 20-27 and 35-41.
- Reading. Upper Intermediate. Brian Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 453402 2

Course Objectives:

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

3rdSEMERTERCOURSES:

- 1. Pharmacology-I**
- 2. General Pathology-I**
- 3. Medical Microbiology-I**
- 4. Intensive care Monitoring-I**
- 5. Hematology-I**
- 6. Communication Skills**
- 7. Respiratory Therapy-I**

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, NSAID, Opioids, Drugs Affecting Endocrine system (Corticosteroids, Thyroid and AntiThyroid), Gastrointestinal Drugs (PPI, H2 blockers and Antacids), Anti-Histamines, Anesthetics (General and local anesthetics),

Practical:

1. Introduction to drug dosage form
2. Study of the action of drugs (Atropine) on the rabbit's eye

RECOMMENDED BOOKS:

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

Aims and 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

Practical

Recommended Books

- Robbins and Cotran Pathologic Basis of Disease, Professional Edition, 8th Edition
- Review of General pathology Firdouse 9th
- Inam Danish Short text book of pathology 3rd edition

OBJECTIVES:

- To describe the basic principles of critical care monitoring in ICU
- To identify the benefits and risks of ICU monitoring techniques
- To describe monitoring techniques used in ICU for Critically ill patients

COURSE CONTENT

Orientation of critical care: Physical design of intensive care setting, Understanding critical care patients, Hazards and safety precautions, Job description of critical care technologist.

Monitoring

Vital signs: Temperature monitoring; Principles of temperature monitoring, Hypothermia and hyperthermia, Pulse, Positioning of patient, Monitoring for pressure sores

Respiratory System: Airway monitoring, Securing ET tube, Cuff pressure, Monitoring Gas Exchange Oxygenation, ABG, Pulse Oximetry, Oxygen delivery and consumption, Ventilation, Oxygen consumption, Alveolar gas equations, Capnography.

Monitoring muscle strength work of breathing, PFT, Recognize the methods & significance of measuring lung volumes and flow in the ICU.

Cardiovascular System: ECG, Non-invasive blood pressure (NIBP), Invasive arterial blood pressure, heart rate.

Nervous system: Neurological history and examination, pupils, Muscle strength, Glasgow Coma Scale, ICP Monitoring

Abdomen/Renal: Intra-abdominal pressure monitoring, Monitoring renal function, Clinical—Urine output, Laboratory—creatinine, creatinine clearance

PRACTICALS

- Demonstration of ICU monitoring equipment.
- Taking B.P on various methods available in ICU.
- CVP monitoring: Zeroing, Calibration, Trouble shooting of pressure transducers
- Taking ABGs practice.

Recommended Books

- 1. Egan's Fundamentals of Respiratory Care—Robert L. Wikins, James K Stoller, Craig L Scalan (Mosby)
- 2. The ICU Book—Paul L Marino (Lippincott, Williams & Wilkins)
- 3. Practical Methods for Respiratory Care—Raymond Sibberson (Mosby)
- 4. Respiratory Physiology—The Essentials | John B West (Williams & Wilkins)

Course Objectives:

By the end of this semester the students of BS technology 3rd semester will be able to

- Discuss basic concepts in Hematology and acquire skill in practical work to produce students steeped in knowledge of Hematology
- Interpret the test results of the basic hematological procedures for accurate diagnosis and patient's monitoring

Course content:

Introduction to hematology, physiology of blood and composition, Introduction to bone marrow, structure and function of bone marrow, Blood formation in the body (Intra-uterine and extra-uterine), factors governing hematopoiesis, Erythropoiesis, different stages and factors effecting on erythropoiesis, Granulopoiesis, different stages and factors effecting on granulopoiesis, Introduction to hemoglobin, structure, synthesis and function of hemoglobin, complete blood count (CBC) and its importance, Morphology of red blood cells and white blood cells and its importance in various hematological disorders, Introduction to anemia its classification, Introduction to hemolysis (physiological and pathological), Introduction to WBC disorders, introduction to leukemia, etiology, pathogenesis and its classification, Leukocytosis, leukopenia, Neutrophilia, condition related to neutrophilia, Eosinophilia, condition related to eosinophilia, Monocytosis, condition related to monocytosis, Lymphocytosis, condition related to lymphocytosis, Introduction to hemostasis, mechanism of hemostasis, function of platelets and coagulation factors, Coagulation cascade, quantitative disorder of platelets, qualitative disorder of platelets.

Practical:

1. Collection of blood sample
2. Preparation and staining of peripheral blood smear
3. Total leucocyte count, rbc count
4. Determination of absolute values
5. Differential leucocyte count; platelet count and reticulocyte count
6. To determine the ESR
7. To determine bleeding time, prothrombin time; activated partial thromboplastin time

Recommended Books:

- Essential of Hematology, A. V Hoff Brand, 6th edition 2006
- Essential of hematology by JP
- Clinical Hematology, G. C Degrunchi, 5th edition 2002
- Practical Hematology, Dacie J. V. 10th edition 2012

Course objectives:

- To introduce the students with basic concepts in bacteriology and mycology.
- To introduce the students with common bacterial and fungal infections.
- To introduce the students with diagnosis of common bacterial and fungal infections.

Course contents:

Historical review and scope of microbiology, sterilization, structure and function of prokaryotic cell, difference between prokaryotic and eukaryotic cell, bacterial growth, normal microbial flora of human body, mechanism of bacterial pathogenesis, host parasite interaction, Immune response to infection, common bacterial pathogen prevailing in Pakistan, introduction to fungi, fungal characteristic, morphology, structure, replication and classification, mechanism of fungal pathogenesis, common fungal pathogen prevailing in Pakistan.

Practical:

- Introduction and demonstration of Laboratory Equipments used in Microbiology.
- Inoculation and isolation of pure bacterial culture and its antibiotic susceptibility testing.
- Demonstration of different types of physical and chemical methods of sterilization, and disinfection.
- Students should be thorough to work with compound microscope.
- Detection of motility: Hanging drop examinations with motile bacteria, non-motile bacteria.
- Simple staining methods of pure culture and mixed culture.
- Gram's staining of pure culture and mixed culture.
- AFB staining of Normal smear, AFB positive smear.
- KOH preparation for fungal hyphae.
- Germ tube test for yeast identification.
- Gram stain for candida.

Recommended books:

- Sherris Medical Microbiology: An Introduction to Infectious Diseases. Ryan, K. J., Ray, C. G., 4th ed. McGraw-Hill, 2003.
- Clinical Microbiology Made Ridiculously Simple. Gladwin, M., & Trattler, B., 3rd ed. MedMaster, 2004.
- Medical Microbiology and Infection at a Glance. Gillespie, S., H., Bamford, K., B., 4th ed. Wiley-Blackwell, 2012.
- Medical Microbiology, Kayser, F., H., & Bienz, K., A., Thieme, 2005.

- Review of Medical Microbiology and Immunology. Levinson, W., 10th ed. McGraw Hill Professional, 2008.
- Jawetz, Melnick, & Adelberg's Medical Microbiology. Brooks, G., Carroll, K., C., Butel, J., & Morse, S., 26th ed. McGraw-Hill Medical, 2012.

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

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, Nonverbal 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), **Organizational communication**, Memos, Letters, Reports, Proposals, Circulars, etc, **Public Speaking and Presentations skills**, Effective public presentation skills, Audience analysis, Effective argumentation skills, Interview skills

Recommended books:

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

Course Objectives:

- To describe professional knowledge, skill, techniques & ethical values to enable the students to apply their acquired expertise.
- Plan the total patient care in medical, surgical, & neurological emergency, including the awareness of support services available and knowing when to activate them.

Course contents:

Oxygen therapy and basic respiratory care: Chemistry of oxygen, Oxygen therapy devices, Mixing air and oxygen, pulmonary oxygen toxicity, the clinical manifestation of pulmonary oxygen therapy, Absorption atelectasis.

Hyperbaric oxygen therapy: Introduction to hyperbaric therapy and description of equipment, Effect of hyperoxia, Uses of hyperbaric oxygen for specific disease, hyperbaric treatment complications.

Humidity and bland aerosol therapy: Humidity therapy, Bland aerosol therapy, criteria for selecting the appropriate therapy

Aerosol drug therapy: Characteristics of therapeutic aerosols, Hazards of aerosol therapy, Aerosol drug delivery system, Selecting an aerosol drug delivery system, Assessment based bronchodilator therapy protocols, Special considerations.

Foundation aspects of mechanical ventilation: Introduction to mechanical ventilation, physiology of mechanical ventilation, Breathing exercise and coughing techniques, Chest physiotherapy and postural drainage.

Practical:

- Resuscitation & airway teaching learning simulators.
- Airway devices- laryngoscopes, tube changers, percutaneous tracheostomy, bronchoscope sets.
- Usage of CPAP & BIPAP devices.
- Endotracheal Intubation & Laryngeal Mask Airway & Tracheostomy Care
- External cardiac resuscitation
- Use of Conventional Defibrillator and Monitors
- Use of Transcutaneous Pacing Devices
- Airway devices- laryngoscopes, tube changers, percutaneous tracheostomy, bronchoscope sets

Recommended books:

- Oxford book of emergency medicine.
- Critical care care medicine At A Glance. Richard Leasch.
- The ICU book of paullmarino.
- Churchill,s pocket book of intensive care by simon M. whitely.
- Quick critical care refrence by SusanB Stillwell.

4thSEMERTERCOURSES:

- 1. Pharmacology-II**
- 2. General Pathology-II**
- 3. Medical Microbiology-II**
- 4. Clinicalmedicine**
- 5. Behavioral Sciences**
- 6. Diagnostic & Imaging**

COURSE OBJECTIVES:

- To provide quality patient care in routine as well as advanced procedures.
- To understand the mechanism of drug action at molecular as well as cellular level, both desirable and adverse.
- To understand the principles of pharmacokinetics i.e. drug absorption, distribution, metabolism and excretion and be able to apply these principles in therapeutic practice.

Course contents:

Drugs acting on cardiovascular system; Drugs for heart failure, anti-hypertensive drugs, antianginal drugs, Anti-Hyperlipidemic drugs, Blood drugs (Anticoagulants), Diuretics, Chemotherapeutic drugs ([Anti-protozoal, Anti-Malarial], Anti-Fungal, Anthelmintic), Antibiotics (Penicillin's, cephalosporin's, macrolides, aminoglycosides, fluoroquinolones), Drugs acting on Respiratory system (Asthma).

Practical:

- Routes of drug administration
- Dose-Response Curves
- Affect of adrenaline on pulse rate
- Affect of beta blockers on heart rate after exercise
- Source of drug and identification of some raw materials that are source of drug
- Weight conversions and measurements
- Preparation Sulfur ointment
- Preparation of pilocarpine drops
- Prescription writing

Recommended Books:

- Lippincott's pharmacology (text book) by Mycek 2nd Edition published by Lippincott Raven 2000.
- Katzung textbook of pharmacology (Reference Book) by Bertram Katzung 8th Edition, Published by Appleton. Dec 2007.

Course Objectives:

- To introduce students with different environmental hazards
- To gain knowledge of some basic systemic diseases

Course contents:

Health effects of climate change, toxicity of chemical and physical agents, environmental pollution, effect of tobacco, effect of alcohol, injury by therapeutic drugs and drugs of abuse, general principles of microbial pathogenesis, special techniques for identifying infectious agents, agents of bioterrorism, heart failure, congenital heart diseases, ischemic heart diseases, hypertensive heart diseases, arrhythmias, atelectasis, chronic obstructive pulmonary disease, asthma, bronchiectasis, pneumonias, pneumothorax, hemothorax, nephrotic syndrome, renal stone, hydronephrosis, aphthous ulcer, gastritis, peptic ulcer, hemorrhoid, jaundice, liver cirrhosis, viral hepatitis, cholecystitis, urinary tract infections, arthritis, facial palsy

Practical:

- Helicobacter pylori test
- Diagnosis methods of UTI
- Determination of renal function tests
- Determination of liver function tests
- Determination of cardiac profile

Recommended Books:

- Robbins Basic Pathology Kumar Abbas Aster 9th Edition 2013
- Review Of General Pathology Moh. Firdaus, 9th Edition
- Short Text Book of Pathology Moh. Inam Danish 3rd Edition 2006

Course objectives:

- To introduce the students with basic concepts in virology and parasitology.
- To introduce the students with common viral and parasitic infections.
- To introduce the students with diagnosis of common viral and parasitic infections.

Course contents:

Introduction to virology, Viral morphology, structure, replication and classification, general properties of virus, pathogenesis and control of virus, common viral pathogen prevailing in Pakistan, introduction to parasitology, Parasite (protozoan and helminthes) morphology and classification, general principal of pathogenesis, immunology and diagnosis of parasitic infection, common parasitic pathogen prevailing in Pakistan.

Practical:

- Cleaning of new and used glass wares for microbiological purposes.
- Students should be familiar to use autoclave, hot air oven, water bath, steamer etc.
- Macroscopic and microscopic examination of stool for adult worms, ova, cysts, larvae.
- Visit to hospital for demonstration of biomedical waste management.
- Demonstration of common serological tests used for the diagnosis of viral and parasitic infection.
- Demonstration of malarial parasites in blood and bone marrow.
- Demonstration of leishmania in blood film.
- Concentration techniques for intestinal parasites in stool.

Recommended books:

- Sherris Medical Microbiology: An Introduction to Infectious Diseases. Ryan, K. J., Ray, C. G., 4th ed. McGraw-Hill, 2003.
- Clinical Microbiology Made Ridiculously Simple. Gladwin, M., & Trattler, B., 3rd ed. MedMaster, 2004.
- Medical Microbiology and Infection at a Glance. Gillespie, S., H., Bamford, K., B., 4th ed. Wiley-Blackwell, 2012.
- Medical Microbiology, Kayser, F., H., & Bienz, K., A., Thieme, 2005.
- Review of Medical Microbiology and Immunology. Levinson, W., 10th ed. McGraw Hill Professional, 2008.

Course objectives:

- To equip the student with professional knowledge, skill, techniques & ethical values to enable them to apply their acquired expertise.
- To understand the medical management of patient in medical intensive care, including the awareness of support services available
- To deliver efficient and competent care to acutely ill patient in intensive care.

Course contents:

Taking a history, Physical examination, The cardiovascular system, Jugular venous pressure, Pulses, Heart sounds, Heart murmurs, The respiratory system, Examining the chest, GI history, Examining the GI system, Genitourinary history, The neurological system, Cranial nerve examination, Speech and higher mental function, Psychiatric assessment.

Signs and symptoms: Abdominal distension, abdominal pain, Apex beat, Athetosis, Breathlessness, Carotid bruits, chest deformity, Chest pains, Cheyne Stokes respiration, Chorea hvostek's sign, clubbing, cough, cyanosis, dehydration, Dizziness, dysarthria, Dyspepsia, dysuria, Epigastric pain, fecal incontinence, Fever and night sweats, plank pain, hematemesis, hematuria, hemiballismus, Hemoptysis, Hepatomegaly, hoarseness, itching, jugular venous pulse and pressure, Nodules, Oliguria, orthopnea, Palpitations, pain, Postural hypotension, Regurgitation, sputum, Stridor, Subcutaneous emphysema, tactile vocal fremitus, tremors, Trousseau's sign, Voice and disturbance of speech, Vomiting, Walking difficulty, Waterbrash, Weight loss, wheeze, Neumonia, Specific pneumonias, Complications of pneumonia, Cystic fibrosis, Bronchiectasis, Lung abscess Fungal infection of the lung, Neoplasms of the lung, Asthma, Asthmatic bronchitis/Refractory asthma, Chronic obstructive pulmonary disease, Interstitial lung disease, Acute respiratory distress syndrome, Respiratory failure Pulmonary embolism, Pneumothorax, Pleural effusion, Sarcoidosis, Hypersensitivity pneumonitis/Extrinsic allergic alveolitis (EAA), Hypersensitivity pneumonitis with eosinophilia, Pulmonary hypertension, Industrial dust diseases, Cor pulmonale, Obstructive sleep apnea/hypopnea syndrome, Lung transplantation.

Practical:

- ECG taking and monitoring
- Infusion pumps
- Defibrillators
- Patient monitors
- Blood Pressure Accessories

Recommended books:

- EMERGENCY Medicine manual. O. John. 2005
- Rosens emergency medicine; concepts & clinical practice John. A Marx. 2005

- Oxford book of emergency medicine.
- Critical care caremedicine At a Glance. RichardLeasch.
- Quick critical care refrence by SusanB Stillwell.

Course Objectives:

- To Conduct the diagnostic interviews
- To Formulating and clarifying diagnostic findings and treatment recommendations
- Documenting evaluation and treatment procedures, involving duties such as recording results of
- diagnostic interviews, lab studies, and/or treatment plans in a timely way according to the
- medical records protocols of the rotation site

Course Contents:

Introduction to Behavioral Sciences and its importance in health: Bio-Psycho-Social Model of Health Care and the Systems Approach, Normality vs Abnormality, Importance of Behavioral sciences in health, Desirable Attitudes in Health Professionals Understanding Behavior: Sensation and sense organs, Perception, Attention and concentration, Memory, Thinking, Communication, Individual Differences: Personality, Intelligence, Emotions, Motivation, Learning, Stress and Stressors, Life Events, Stress, Management, Interviewing / Psychosocial History Taking, Allied Health Ethics-Hippocratic oath, Culture and Allied Health practice, Psychological reactions, Breaking Bad News, Pain, Sleep, Consciousness.

Recommended Books:

- Behavioral Sciences by M.H Rana 2007, edition 5th
- Sociology in a Changing World by William Kornblum 8th edition 2007
- Changing Behavior: Immediately Transform Your Relationships with Easy-to-Learn, Proven Communication Skills by Georgiana Donadio 2011, edition 5th

Course objectives:

- To equip the student with professional knowledge, skill, techniques & ethical values to enable them to apply their acquired expertise in diagnostic imaging.
- To understand the total patient care imaging diagnostic study, including the awareness of support services available and knowing when to activate them.

To deliver the efficient and competent care to acute and chronically ill patient in imaging and

- diagnostic study.

Course contents: Normal chest X-ray anatomy, Basic physics of X-ray and assessment of film quality, Interpretation CXR, Cardiac configuration, Identify cardiomegaly, Identify atelectasis and lung collapse, Lung field and airway, Optimum position of ETT, NGT, CENTRAL LINES, Percutaneous gastrostomy Tube, PCN Tube, DJ stent, Radio-opaque line importance, Abnormal X-ray, Identification of (Trauma, Hemothorax, Pneumothorax, Lung contusion) on X-Ray film, Bed side Ultrasound in ICU, Echocardiography/TEE, Pulmonary Edema, Cardiac Deviation, ARDS, Pneumonia (Bronchial pneumonia, Lobar pneumonia, Aspiration pneumonia). Protection of health care workers in diagnostic imaging department, Responsibilities of Technologist in diagnostic imaging department, Patient care protocols in diagnostic imaging department.

Practical:

- Identification of the Structures of different organs
- Radiological Presentation & Pathological Findings on Radiographs
- Films demonstrating Anatomy

Recommended books:

1. Diagnostic Imaging by Peter Armstrong Martin Wastie Andrea G Rockall 6th Edition.
2. Clinical Radiology Made ridiculously simple.

5thSEMESTERCOURSES:

- 1. Advances in respiratory therapyand intensive care**
- 2. Trauma Intensive Care**
- 3. AnesthesiaEquipment**
- 4. Burns& Toxicology**
- 5. Applied Physics**
- 6. Critical care Laboratory diagnostics**

Course objectives:

The purpose of this course is to

- Recognize routine daily care techniques.
- Assess patients and perform physical examination of patients in critical care units.
- Construct the knowledge of Basic patient care techniques.
- Recognize ICU equipment, therapies and technical management of common and important problem in critical care setting.

Course contents:

History taking, Patient general physical Examination: CNS, Respiratory system, Cardiovascular system, Abdominal regions, Renal system, Neurological examination, Body perfusion, Technique of ECG taking, Artificial airways

Technologists SOP's: Patient charting, Technique and interpretation of ABG's, Chest Tube Intubation, Technique and Interpretation of ECG, Practical training of the routes of drug administration (I/V, arterial & CVP line maintenance), Echocardiography, Angiography, Angioplasty.

Management:

Fluid and electrolyte therapy, Initial management of cardiac patient, Life Support System (BLS and ACLS) management of patient after massive transfusion, protocols for oral health.

Practical:

- Knowing Infusion pumps, syringes
- Preparation of cardiac medications
- Method of drawing Arterial Blood Gasses
- Log book and project completion for internal assessment
- Should know the workings of all ICU equipment
- Should know care and maintenance of all ICU equipment
- Should be able to assess fluid responsiveness in a patient

Recommended Books

- The ICU Book – Paul L Marino (Lippincott, Williams & Wilkins)
- Practical Methods for Respiratory Care – Raymond Sibberson (Mosby)
- Ventilation/Blood Flow & Gas Exchange – John B West (Blackwell Scientific Publications)
- Mechanical Ventilation – Susan P Pilbeam & JM Cairo (Elsevier)
- Critical Care Secrets: Parsons, Wiener – Kronish, Jaypee Brothers
- Washington Manual of Critical Care

Course objectives:**The purpose of this course is to**

- Equip the student with professional knowledge, skill, techniques & ethical values
- Apply their acquired expertise in trauma situations.
- Manage crisis situations safely and accurately perform all basic and advanced life support procedures.

Course contents:

Basic concept about trauma, Pre Hospital Care, Trauma types, Initial assessment & management, Primary survey, secondary survey, Trauma score & Trauma flow sheet, Trauma management pre & in hospital phase, Injury prevention, Triage, Air way management with cervical injury, maxillofacial trauma, spine and spinal cord injury, Chest trauma, Head trauma, Neck trauma, Musculoskeletal trauma, abdominal trauma, Circulation & hemorrhage control, trauma in pregnancy.

Practical:

- Recognize trauma emergency, assess the situation, obtain a basic history and physical examination, manage emergency care, and, if needed, extricate the patient.
- Blood Pressure Recording
- Peripheral Venous Access
- Central Venous Access
- Cardiopulmonary Resuscitation
- ECG taking and monitoring
- Usage of Infusion pumps
- Usage of Defibrillator

Recommended books:

- EMERGENCY Medicine manual. O. John. 2005
- Rosens emergency medicine; concepts & clinical practice John. A. Marx. 2005
- Oxford book of emergency medicine.
- Critical care care medicine At a Glance. Richard Leasch.
- Oh's manual of intensive care by Andrew Bersten.

Course objectives:

- To explore his/her cognition about different instrument, working principles & its importance for safe anesthesia practice in the health care system.
- To manage technical fault during anesthesia
- To make sure correct calibration of different instrument.

Course contents:

Anesthesia machine its different parts & working principle, Medical gas supply devices, Laryngoscope, Breathing circuits, Facemasks, Anesthesia ventilators working principles, vaporizer, Monitoring devices, Manual Resuscitation bag, Defibrillator, LMA, ETT, Air ways oral & nasal, Suction machine, infusion pump, reservoir bag, Stethoscope, Spinal needles, Epidural needles & others, Magill Forceps, Blood gas Analyzer

Practical:

- Ventilator settings according to patient weight, age & disease.
- Sterilization of Anesthesia equipment.
- Application of various breathing circuits.
- Venturi masks
- Application of Face masks
- Application of Epidural Anesthesia.
- Setting of air way management devices.

Recommended books:

- Clinical Anesthesiology by Morgan & Mikhail Fifth Edition.
- Essential of Anesthesia Equipment by Bahal –al –Sakaih & Simon Stacey 3rd edition.

Course objectives:

- Recognize a medical emergency, assess the situation, obtain a basic history and physical examination, manage burn care, and, if needed, extricate the patient.
- Manage crisis situations and safely and accurately perform all basic and advanced life support procedures.

Course contents:

Burn management, Burn types, Management of scald, Management of electric burn and shock, - Method for applying a universal dressing, adhesive type dressing- Proper method for applying bandages: self-adherent, gauze rolls, triangular, adhesive tape, and air splints- Inhalation injury and emergency care. splints and tourniquets- Diet & feed balance and its calculation administration & monitoring.

Allergies: Introduction, Definition, Triggers - Signs and symptoms, differential diagnosis & management - Allergic reaction, emergency response algorithm- Drugs and their delivery- Pre hospital care report for patients with allergic reactions.

Poisoning / Overdose: Introduction - Routes of exposure, Poison information centers - General principles of Toxicology, management of drug poisoning (Morphine, aspirin, paracetamol, benzodiazepines, digoxin, iron, insulin), Organo-phosphorus poisoning.

Physical examination, General management of toxicants/toxins (pesticides, heavy metals, snake venom, bee stings, mushroom).

Practical:

- Application of rule of nine for estimation of total burn surface area.
- Fluid input & output Recording & measurement.
- ECG taking and monitoring
- Blood Pressure Recording
- Peripheral Venous Access
- Central Venous Access
- Interosseous Access
- External cardiac resuscitation
- Monitoring Arterial Pulse Oximetry
- Urinary & Gastric Catheterization

Recommended books:

- EMERGENCY Medicine manual. O. John. 2005
- Oxford book of emergency medicine.
- Critical care medicine At a Glance. Richard Leach.
- The ICU book of Paullmarino.
- Churchill's pocket book of intensive care by Simon M. Whitely.

OBJECTIVES

- Acquire knowledge about introductory physics, transducers, Reynolds no, laminar or turbulent flow.
- Demonstrate knowledge various gas laws in anesthesia & their application in invasive & non-invasive ventilation.
- Utilize various oxygen delivery & therapy devices during critical situation & their troubleshooting.

COURSE CONTENT**Basic physics:**

Gas behavior under changing conditions, Gases laws Boyles / Charles / Gay Lussacs, Daltons laws & application, Venturi Law, Body fluid dynamics, Concepts of pressure of fluids and gases in body, volumes of body fluids, Temperature, Humidity Measurements, gas dynamic in human body, fluid dynamic in human body. SI units of pressure, temperature, current, volumes, mass, moles interpretation in medical background. **Oxygen:** Sources of Oxygen for therapy, Storage of Oxygen, Oxygen delivery system, Hazards of Oxygen.

Storage of medical gases: Cylinders, Liquid gas storage, oxygen concentrator, Piped distribution system.

Basic principles and use of Capnography, Plethysmography, spectrophotometry, Transducers in medical equipment.

Practical:

- Application of High & low flow oxygen Face masks
- Application of Ventilator setting modes alarms & their troubleshooting
- Setting of air way management devices
- Application of cardiac monitor accessories
- Application of spirometry, pulmonary function test, Capnometer usage
- Converting unit's formulas practice

Recommended books:

- EMERGENCY Medicine manual. O. John. 2005
- Rosens emergency medicine; concepts & clinical practice John. A. Marx. 2005
- Oxford book of emergency medicine.
- Critical care medicine At a Glance. Richard Leach.
- Oh's manual of intensive care by Andrew Bersten.
- The ICU book of Paul Marino.

OBJECTIVES:

At the end of semester student should:

- Todevelopthebasicunderstandingofcommon diseaseinintensivecareunit.
- Tointerpretdvarioustestsessentialforthediagnosisofdifferentdiseasesinintensivecareunit

Course contents

LIVER FUNCTION TESTS: Interpretation and importance in Hemolytic anemia, Hepatitis and cholestasis.

RENAL FUNCTION TESTS: Serum Blood urea nitrogen and creatinine, Basic pathophysiology of azotemia, Creatinine clearance and its importance, Urinalysis.

CARDIAC BIOMARKERS: Markers of cardiac cell damage including cardiac troponins and creatine kinase.

PANCREATIC FUNCTION TESTS: Importance of serum amylase and lipase.

STOOL EXAMINATION: Importance of macroscopic stool examination, Significance of WBCs and RBCs in microscopic examination of stools, Examination of stools for ova and parasites.

COMPLETE BLOOD COUNT AND PERIPHERAL SMEAR: Importance of alteration in different blood indices, Significance of changes in RBC shape and size, Significance of blast cells in peripheral smear.

ABGs: indication, interpretation, and significance in metabolic and respiratory disorders.

PRACTICAL:

ABGs performing.

Venous sampling collection

Taking blood from Central lines

Taking bronchial sample

ROCOMMENDED BOOKS

- District Laboratory Practice in Tropical Countries by Monica Cheesbrough
- Clinical Laboratory Medicine *Lippincott Williams & Wilkins (LWW)*
- ICU Book Paulmerino
- EKG book, Dale and dubbin.

6thSEMERTERCOURSES:

- 1. Surgical Intensive care**
- 2. Drugs related to intensive care and respiratory therapy**
- 3. Intensive care Monitoring-II**
- 4. Neonatal & Pediatric Critical care**
- 5. Cardiovascular Emergency**
- 6. Respiratory Therapy-II**

Course objectives:

- Deliver efficient and competent care to patient in surgical emergency.
- To construct knowledge to maintain asepsis in all such cases to the standards maintained, by the affiliated hospitals.

Course contents:

Management of acute airway bleed, management of gastrointestinal upper & lower bleed. Management of hemorrhagic & non-hemorrhagic shock, hemorrhagic control management of pneumothorax, Hemothorax & hydrothorax, application of chest tube insertion. Drainage of abnormal pleural fluid in Respiratory emergency & Compromise, plural aspiration, Indication of tracheostomy Tube its Complication & care, Indications & application of central venous Line & its pressure measurement, Indication of Peripheral Venous Access, Intraosseous Access, Venous Cut Down in Dehydrated Patients & its Complications, Suturing skills, Important intensive care procedures: Cricothyroidotomy, Tube thoracostomy or thoracocentesis, Percutaneous tracheostomy, Pericardiocentesis, Ascitic tap, Pleural tap, Lumbar puncture, Biopsies: CT guided biopsy, Ultrasonic guided biopsy, excisional Biopsy

Bronchoscopy: Flexible bronchoscopy, rigid bronchoscopy, Fluoroscopy, Echocardiography, Pulmonary angiography, pulmonary angiogram, post-surgical care of patient.

Practical:

- Usage of Enteral feeding pumps
- Usage of Blood gas and electrolyte analyzer
- Resuscitation & airway teaching learning simulators
- Airway devices- laryngoscopes, tube changers, percutaneous tracheostomy, bronchoscope sets.
- Hemodialysis machine
- Cardiopulmonary Resuscitation
- ECG taking and monitoring
- Blood Pressure Recording
- Peripheral Venous Access
- Central Venous Access
- Intraosseous Access

Recommended books:

- EMERGENCY Medicine manual. O. John. 2005
- Rosen's emergency medicine; concepts & clinical practice John. A Marx. 2005
- Oxford book of emergency medicine.
- Critical care medicine At A Glance. Richard Leasch.
- Oh's manual of intensive care by Andrew Bersten.
- The ICU book of Paull Marino.

OBJECTIVE: at the end of this course the student will be able to

- Understand the cardiovascular therapy especially in critically ill patients
- Understand the pulmonary therapies and their usage in respiratory care
- Know the overview of endocrine, gastroenterology, liver and nutrition therapies

COURSE CONTENT

ACUTE RESUSCITATION: ACLS Drugs

ANESTHESIA, ANALGESIA, SEDATION AND NEUROMUSCULAR BLOCKADE: Ketamine,

nalbupine, morphine, fentanyl, atracurium, rocuronium, midazolam, propofol, **CARDIOVASCULAR**

THERAPIES: Fibrinolytic Therapy for ST-Segment Elevation ACS and Contraindications, Treatment of

Hypervolemia, Pulmonary Edema, Cardiogenic Shock and Decompensated Heart Failure Associated with

Systolic Dysfunction, Calcium Channel Antagonist, Beta Blockers, **PULMONARY THERAPIES:** Asthma

Therapeutic Options, Antibronchospastic Agents Metered Dose Inhalers, Nebulized Drugs and Continuous

Nebulization, Theophylline/Aminophylline Dosing and drug interaction, Mucolytic Agents, **RENAL:** Diuretics,

GASTROENTEROLOGY, LIVER AND NUTRITION THERAPIES: Gastrointestinal Hemorrhage

Available Therapies, Hepatic Encephalopathy Therapies, Antiemetic, **NEUROLOGIC AND PSYCHIATRIC**

THERAPEUTICS: Seizures Urgent Management, Seizures Maintenance Therapy.

Practical:

- Prepare ACLS drugs and label it
- Prepare sedative and analgesic drugs and calculate dosing
- Prepare trolley for endotracheal intubation
- Prepare medication for intubation

Recommended Books:

- Handbook of Critical Care Drug Therapy, 3rd Edition
- The Harriet Lane Handbook, 20th Edition

OBJECTIVES

- To describe the principles of basic and advanced monitoring patients in intensive care unit.
- To explain the various equipment and its maintenance used for the management and monitoring of the patient in intensive care unit

COURSE CONTENT:

Monitoring muscle strength, work of breathing, Maximum inspiratory and expiratory pressures, Bedside PFT, Ventilator bundles, ICU bundles, ICU Mortality rate, ICU scoring system, Early Warning system, SOFA scoring system, the APACHE-II,

CNS: Monitoring brain stem function, GCS, Pain scoring, Sedation and analgesia scoring, Coma.

Nutritional monitoring

Care & maintenance of ICU equipment & Troubleshooting (Includes quality checks and calibrations of all the equipment) Pumps: Infusion, syringe, Monitors: Stand-alone & multi-parameter, Cardiac Output monitors, ECG machine, ABG machine, Defibrillator, Ultrasound machine, Bronchoscope, Intubation trolley components and daily monitoring, wall out lets monitoring,

PRACTICALS

- Logbook and project completion for internal assessment
- How to check ICU equipment.
- Cleaning, sterilization and maintenance of all ICU equipment
- Adjustment of ventilator parameters.
- Monitor fluid responsiveness in ICU patient

REFERENCE BOOKS

- Egan's Fundamentals of Respiratory Care—Robert L. Wikins, James K. Stoller,
- The ICU Book—Paul L. Marino (Lippincott, Williams & Wilkins)
- Practical Methods for Respiratory Care—Raymond Sibberson (Mosby)
- Respiratory Physiology—The Essentials | John B. West (Williams & Wilkins)
- Ventilation/Blood Flow & Gas Exchange—John B. West (Blackwell Scientific Publications)
- Techniques in Bedside Hemodynamic Monitoring—Elaine Kiess Daily & John Speer Schroeder (Mosby)

Course Objectives:

- To develop the knowledge and skills regarding neonatal and pediatric intensive care.
- To provide basic knowledge about the management of neonatal and pediatric abnormalities in intensive care unit

Course contents:**Neonates, Infants and Children**

Introduction, Anatomical considerations, Normal delivery procedure- Prenatal care- Intranatal care Postnatal care- Newborn care- Abnormal deliveries- Prolapsed cord- Breech delivery, Multiple birth Premature delivery, Assessment of the infant and children- developmental considerations for the age group of infants, toddlers, pre-school, school age and adolescent- Neonatal Resuscitation.

Common Diseases among Infants & Children

Respiratory distress infant and children- Differentiate between respiratory distress and respiratory failure- Airway obstruction, -steps in the management of foreign body airway obstruction- LRI, URI, Bronchiolitis

Structural approach towards a serious illness in injured child, Child with breathing difficulty, Asthma, Child with abnormal pulse rate and rhythms, Convulsing child, child in shock, Shock types and its management, Child with burns and Scald, Child with decreased conscious level, Child with abdominal Trauma, Acute chest trauma, Child with acute spinal cord injury, Child with head injury and its management, Near Drowning.

Practical:

1. Blood gas and electrolyte analyzer
2. Resuscitation & airway teaching learning simulators
3. Portable Suction machine
4. Portable Vital Signs Monitor
5. Transport Incubators
6. Advance Pediatric life support.

Recommended books:

- Nelson Text Book of Pediatrics 20th edition.
- Text Book of Pediatrics by Prof Dr Azam Khan.
- EMERGENCY Medicine manual. O .John. 2005
- Rosen's emergency medicine; concepts & clinical practice John. A Marx. 2005
- Oxford book of emergency medicine.
- Oh's manual of intensive care by Andrew Bersten.
- The ICU book of Paull Marino.

Course Objectives:

- To understand the total patient care about cardiovascular management in intensive care unit.
- To develop the efficient care to acute and chronic cardiovascular patients in intensive care unit
- To construct skill regarding maintenance and use of equipment of cardiovascular patients.

Course contents:

Management of Ventricular Tachycardia, & Ventricular Fibrillation, Management of Pulse Less Electrical Activity, Management of A systole, Management Of Stable & Unstable tachycardia, Management of Acute Coronary Syndrome, Management of acute myocardial infarction & chronic heart failure Management of heart blocks, Manual defibrillation, cardioversion, temporary pacing, transcutaneous pacing, medical management of Cardiovascular diseases, cardiovascular drugs.

Practical:

- External cardiac resuscitation
- Conventional Defibrillator and Monitors
- Transcutaneous Pacing Devices
- Endotracheal Intubation & Laryngeal Mask Airway
- Resuscitation & airway teaching learning simulators
- Cardiopulmonary Resuscitation
- ECG taking and monitoring
- Blood Pressure Recording

Recommended books:

- EMERGENCY Medicine manual. O .John.2005
- Rosens emergency medicine; concepts & clinical practice John.A Marx.2005
- Oxford book of emergency medicine.
- Critical care care medicine At A Glance. Richard Leasch.
- Oh;s manual of intensive care by Andrew bersten.
- The ICU book of paullmarino.
- Churchill,s pocket book of intensive care by simon M. whitely.
- Quick critical care refrence by SusanB Stillwell.

Course Objectives:

- To develop professional knowledge and ethical values for respiratory pathologies in intensive care unit
- To equip the students regarding management of various respiratory problems in intensive care unit

Course contents:

Setting up and Troubleshooting, Non Invasive Ventilation, NIV on Standard Ventilator, Bipap, CPAP, Invasive Ventilation.

Introduction to Ventilator waveforms, Bedside interpretation of ventilator waveforms, Ventilation protocols. Ventilator setting according to ABGs, Discontinuing of ventilator support: Definitions, Reasons for ventilator dependency, Patient evaluation, Preparing the patient, Methods, Newer techniques for facilitating ventilator discontinuance, Selecting an approach, Monitoring the patient during weaning, Extubation, Failure, Chronically ventilator-dependent patients, Terminal weaning, Ventilator bundles, Ventilator management of specific disorders: ARDS, COPD, SEVERE ASTHMA EXACERBATION, Setting up Ventilator, Alarm, Trigger, Evaluate and Troubleshoot the Patient- Ventilator System, Detect and Measure Auto-Peep, Monitoring of Patient who are Assisted by Mechanical Ventilation and are in Sudden Distress.

Practical:

- Resuscitation & airway teaching learning simulators.
- Airway devices- laryngoscopes, tube changers, percutaneous tracheostomy, bronchoscope sets.
- CPAP & BIPAP devices.
- Endotracheal Intubation & Laryngeal Mask Airway & Tracheostomy Care
- External cardiac resuscitation
- Conventional Defibrillator and Monitors
- Airway devices- laryngoscopes, tube changers, percutaneous tracheostomy, bronchoscope sets

Recommended books:

- EMERGENCY Medicine manual. O. John. 2005
- Rosen's emergency medicine; concepts & clinical practice John. A. Marx. 2005
- Oxford book of emergency medicine.
- The ICU book of Paull Marino.
- Churchill's pocket book of intensive care by Simon M. Whitely.

7thSEMERTERCOURSES:

- 1. ObstetricalCritical care-I**
- 2. Recognition& management of organ failure**
- 3. Fundamentals of Infection Control**
- 4. Epidemiology**
- 5. Biostatistics**
- 6. Research methodology**

Course Objectives:

- To provide knowledge regarding various abnormalities during obstetrical emergencies and its management.
- To demonstrate practical issues emerge during obstetrical emergencies.

Course contents:

Management of Obstetrical emergency, Medical emergency during pregnancy, Mother with Breathing difficulty, Severe bronchial asthma, Acute lower respiratory tract infection, Heart Failure, Anemia, Sickle cell disease, Management of diabetic ketoacidosis, Anaphylaxis management, pulmonary embolism, Severe Dehydration, Mother with severe gastroenteritis, mother with acute renal failure, mother in coma convulsion, HIV in pregnancy, Emergency Relating to Pregnancy, Mother with severe abdomen pain, Ectopic pregnancy, Abortion, Mother with severe abdomen pain in later pregnancy, Mother with large antepartum hemorrhage, Mother with large post partum hemorrhage.

Practical:

- Automated External Defibrillator
- Conventional Defibrillator and Monitors
- Endotracheal Intubation & Laryngeal Mask Airway
- Lung ventilation and/or administering oxygen
- End Tidal CO₂ Measuring Devices
- Monitoring Arterial Pulse Oximetry
- Urinary & Gastric Catheterization
- Episiotomy scissor
- Cardiopulmonary Resuscitation

RECOMENDED BOOKS:-

1. EMERGENCY Medicine manual. O. John. 2005
2. Rosen's emergency medicine; concepts & clinical practice John. A. Marx. 2005
3. Oxford book of emergency medicine.
4. Critical care care medicine At a Glance. Richard Leasch.
5. Oh's manual of intensive care by Andrew Bersten.
6. The ICU book of Paull Marino.
7. Churchill's pocket book of intensive care by Simon M. Whitely.
8. Quick critical care reference by Susan B Stillwell.

Course Objectives:

- To understand the total patient care in management organ failure in intensive care, including the awareness of support services available and knowing when to activate them.
- To deliver efficient and competent care to acute and chronically ill patient in management organ failure in intensive care.

Course contents:

Management of renal failure, Management of liver failure, Acute Respiratory Failure, Acute Ischemic & Chronic Heart Failure, Coma, Encephalitis, BLS, ACLS, APLS.

Practical:

- External cardiac resuscitation
- Automated External Defibrillator
- Conventional Defibrillator and Monitors
- Measurement of central venous pressure
- Insertion of arterial line
- End Tidal CO₂ Measuring Devices
- Monitoring Arterial Pulse Oximetry
- ECG taking and monitoring
- CPR on the simulators.

RECOMMENDED BOOKS:

- EMERGENCY Medicine manual. O. John. 2005
- Rosen's emergency medicine; concepts & clinical practice John. A. Marx. 2005
- Oxford book of emergency medicine.
- Critical care care medicine At a Glance. Richard Leasch.
- Oh's manual of intensive care by Andrew Bersten.
- The ICU book of Paul Marino.
- Churchill's pocket book of intensive care by Simon M. Whitley.
- Quick critical care reference by Susan B. Stillwell

Course Objectives:

- To introduce the students with basic concepts in infection control.
- To introduce the students with infection control principles and practices.
- To introduce the students with importance of immunization and hand hygiene in infection control.
- To introduce the students with the role of clinical laboratory in infection control.

Course contents:

Introduction to infection control, principle of infection control, source and transmission of infection, infection in the hospital environment, immunization prophylaxes, exposure prophylaxes, sterilization, disinfection and antisepsis, practical disinfection, epidemiology of infectious disease, antimicrobial agents, antibiotic and their uses (prophylactic, empirical, and therapeutic), antibiotic resistance and policy, principles of laboratory diagnosis of infectious diseases, biomedical waste management, biosafety levels, hand hygiene, standard precautions and PPE.

Practical:

- Hand washing and hand rubbing technique.
- Preparation of different disinfection and antiseptic solutions.
- Biomedical waste management in hospitals.
- Cleaning and disinfection of working premises.
- How to handle spills and aseptic handling.
- Standard precautions and PPE.

Recommended Books:

- Fundamentals of Infection Prevention and Control: Theory and Practice. Weston, D., Wiley-Blackwell, 2013.
- Sherris Medical Microbiology: An Introduction to Infectious Diseases. Ryan, K. J., Ray, C. G., 4th ed. McGraw-Hill, 2003.
- District Laboratory Practice in Tropical Countries, Part 1 & Part 2. Cheesbrough, M., 2nd ed. Cambridge University Press, 2006.
- Medical Microbiology and Infection at a Glance. Gillespie, S., H., Bamford, K., B., 4th ed. Wiley-Blackwell, 2012.

Course objectives:

After studying this course the students will be able to:

- Explain epidemiological terminologies
- Apply the knowledge to calculate disease risk, prevalence and incidence
- Select and choose an appropriate study design in research
- Explain confounding and Biases in studies
- Appraise SWOT analysis

Course Contents:

Introduction to Epidemiology and basic terms used in Epidemiology, Measures of Disease Occurrence; Incidence and Prevalence, Incidence, Rates and its types, Dynamics of disease transmission, Measurement of disease frequency, risk, rate and proportion, Calculation of: Prevalence, Incidence, Duration, Mortality and Morbidity, Study Design Options, Research study Designs, Case Control Study, Cohort Study, Experimental Study, RCT, Meta-analysis and systematic review, The Cross-Sectional Study, Case-Reports, Sources of Error; Confounding and Biases, Odds ratio and relative risk, SWOT analysis, Reliability of tests by using Sensitivity and specificity

Recommended Books:

- Calculation of Sensitivity and specificity
- Calculation of Incidence and prevalence
- Finding risk of disease, rate and frequency
- SWOT analysis

Recommended Books:

- 1. An Introduction to Epidemiology for Health Professionals
- Epidemiology by Leon Gordis 5th Edition

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:

Introduction to Biostatistics and its types; Descriptive and inferential statistics, Measure of central tendency, Measure of dispersion, Statistical data, Presentation of Data by Graphs, Data and its types, Data collection tools, Data analysis tools Health Related Data, Presentation of quantitative data, The concept of sampling, types and methods of sample, sample distribution, error of sampling, Variable and its types, Tests used in biostatistics their use and interpretation (t-tests, Chi-square ANOVA, Regression and correlation) Hypothesis formulation and testing on the basis of statistics and statistical tests, Sample and population, Basic considerations in sampling, random sampling, stratified random sampling, cluster sampling, systematic sampling, determination of sample size, elimination of sampling bias, two types of errors, acceptance and rejection Regions, Two sided and one sided tests, general steps in hypothesis testing, test about means, confidence interval for mean, Preparing data analysis by various software, Use of SPSS

Practical Work:

- Manual calculation related to measure of central tendency and measure of Dispersion
- Defining variables in SPSS
- Entry of data in SPSS
- Analysis of data in SPSS

Recommended Books:

- A guide to research methodology, biostatistics and medical writing by college of physicians and surgeons Pakistan by WHO collaboration center
- Reading understanding multivariate statistics Gimm LG Yard AD PR, publisher American Psychological association
- Ilyas Ansari's community medicine (Text Book) by Ilyas and Ansari 2003 published by Medical division Urdu Bazaar Karachi

Course Objectives:

After studying this course the students will be able to:

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 to research (in simple terms and scientific terms), concept of research, why do we need research, advantage and scope of research, identification of research needs and its qualities, Types of research; Qualitative, Quantitative and their subtypes, Research process Introduction (Deciding, formulating research questions, planning, conduct of study, data collection, processing and analysis, Research writing and reporting), Literature review (What, why, where from, how and qualities of good literature and its use), Writing a research problem/question and selection of the title of study, Identification of various research variables, Hypothesis types, formulation and testing of hypothesis, Research study designs used in qualitative and quantitative studies, Designing of data collection tools/questionnaires, Selection of appropriate sampling technique in various study designs, Concept of validity and reliability, Research proposal writing, Ethical principles of Research and their examples to apply those principles, Data collection and processing/displaying techniques, Writing of research report (Chapters in research report/thesis, Outline/Abstract of research, Referencing and Bibliography)

Practical Work:

- Literature Search
- Survey conduct
- Citation and Referencing
- Proposal writing
- Data collection and displaying

Recommended Books:

- Research Methodology by Ranjit Kumar 3rd Edition
- Foundation of Clinical Research by Portney LG Walkais MP in 1993, Publisher by Appleton and lauge USA

- A guide to Research Methodology, Biostatistics and Medical writing by college of physicians and surgeons Pakistan by WHO collaboration center
- Health system research project by Corlien M Varkerisser, IndraPathmanathan, Ann Brownlee in 1993 by International Development Research Center in New Dehli, Singapore.

8thSEMERTERCOURSES:

- 1. ObstetricalCritical care–II**
- 2. Intensive Care Management**
- 3. Bioethics**
- 4. Research Project.**

Course Objectives:

- To gain experience in the analysis of data and management of hemodynamic and electrolyte instability, particularly shock, cardiac disease states, obstetrical emergencies and other medical and surgical crisis.
- To Confidently handle crisis situations and safely and accurately perform all basic and advanced life support procedures

Course contents:

Pre-pregnancy and antenatal care, stages of labor, Mother with dangerous fever during pregnancy and labor, Loss of fetal movement after 22 weeks of gestation, severe puerperal sepsis, Mother with pre-Eclampsia & Eclampsia, Mother with complication of labor, Fetal distress, Obstructed labor, Shouldered dystocia, prolapsed cord, uterine inversion, rupture of uterus, malposition & presentation, lithotomy position, per mortem caesarian section, Partogram, ventouse delivery, caesarian section, Episiotomy.

Practical:

- External cardiac resuscitation
- Automated External Defibrillator
- Use of Conventional Defibrillator and Monitors
- Endotracheal Intubation & Laryngeal Mask Airway
- Lung ventilation and/or administering oxygen
- Use of End Tidal CO₂ Measuring Devices
- Monitoring Arterial Pulse Oximetry
- Urinary & Gastric Catheterization
- Episiotomy scissor
- Cardiopulmonary Resuscitation
- ECG taking and monitoring

RECOMENDED BOOKS:-

- EMERGENCY Medicine manual. O. John. 2005
- Rosen's emergency medicine; concepts & clinical practice John. A. Marx. 2005
- Oxford book of emergency medicine.
- Critical care care medicine At a Glance. Richard Leasch.
- Oh's manual of intensive care by Andrew Bersten.
- The ICU book of Paul Marino.
- Churchill's pocket book of intensive care by Simon M. Whitely.
- Quick critical care reference by Susan B Stillwell.

Course Objectives:

- To know & demonstrate leadership skills as team leaders & managers
- To know what is the role of Human Resource Management in an organization
- To effectively do performance appraisal for incentives & rewards
- To define, describe & interpret job descriptions of employees in an organization
- To manage training of team members.

Course contents:

Introduction to Intensive Care Management: Who is a manager, Role of managers, Leadership, Motivation
 Total Quality Management: What is TQM, Quality control & quality assurance, Tools for TQM, Mortality and Morbidity calculation in ICU, ICU bundles. Transportation of critical ill patient inter and intra hospital, Transportation of critical ill patient for surgical procedure and for diagnostic evaluation with all emergency medicine.

Practical:

- Resuscitation & airway teaching learning simulators
- Usage of Portable Suction
- Usage of Portable Vital Signs Monitor
- Usage of Patient transfer trolleys
- Ambulance stretcher
- Preparation of Medicines trolley
- Preparation Dressing trolley
- Usage of infusion pumps

RECOMENDED BOOKS:-

- EMERGENCY Medicine manual. O. John. 2005
- Rosens emergency medicine; concepts & clinical practice John. A Marx. 2005
- Oxford book of emergency medicine.
- Critical care care medicine At a Glance. Richard Leasch.
- Oh's manual of intensive care by Andrew Bersten.
- The ICU book of Paul Marino.
- Churchill's pocket book of intensive care by Simon M. Whitely.
- Quick critical care reference by Susan B Stillwell

Course Objectives:

- The student will learn some basic research methodology, gain knowledge of the specific area of radiology being researched and have the opportunity for more extensive one-on-one interaction with a member of the radiological staff. It will hopefully result in some form of presentation or publication for the student. This is most suitable for students planning to enter radiology as a career.

Course contents:

During last year each student should select a topic of research report with consultation of his/her supervisor and shall prepare and submit research report to Khyber Medical University by the end of last year.

Practical:

- A hard copy of research project should submit to examination for degree requirements fulfillment

Credit Hours 2(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