CURRICULUM FOR BACHELOR SCIENCE IN SURGICAL TECHNOLOGY

INSTITUTE OF PARAMEDICAL SCIENCES

KHYBER MEDICAL UNIVERSITY PESHAWAR

Prepared By: ZAHID RAHMAN

LECTURER (Surgical) IPMS-KMU

AIMS AND OBJECTIVES OF THE COURSE

AIMS:

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

GENERAL LEARNING OBJECTIVES:

BS Surgical Technology education and training should enable the student to:

- Develop accuracy and meticulousness to attain high levels of ethics and technical proficiency.
- Assess the technical and non-technical skills in a standardized and reproducible environment.
- Strengthen the decision power and exercise appropriate judgment skills, to be applied especially during crises.
- Develop good leadership, problem solving and administrative skills.
- Develop and analyze innovative strategies for effective communication with the patients and the health care personal.
- Demonstrate interdisciplinary team building strategies for effective coordination between various Allied Health Disciplines.
- Demonstrate understanding of the basic concepts of professional behavior and legal implications of the work environment.
- Demonstrate the knowledge of his / her role in health care delivery system.
- Establish and maintain continuing education as a function of growth and maintenance of professional competence.

SPECIFIC LEARNING OBJECTIVES

Following competencies will be expected from a student completing 4 years degree course in Operation Theatre Technology. The student should be proficient in:

1. Cleaning, packing, sterilization, maintenance and storage of instruments and other equipment used in Operation Theatre and recovery room.
2. Ensuring the cleanliness of the Operation Theatre and the recovery room prior to operations.
3. Preparing and checking surgery equipment's and instruments prior to operations.
4. Receiving and caring the patient during different surgical maneuvers and in recovery room.
5. Assisting the doctor during the surgery and providing supplies for the surgical team.
6. Undertaking safety checks on surgical sundries.
7. Carrying out instructions of the medical staff in order to relieve pain and discomfort.
8. Monitoring the patient's condition.
9. Handing over the care of the patient to the ward staff.
10. Working as a member of the team.
11. Taking precautions to ensure the health and safety of himself and others.
12. Leading the team of technicians and assistants to perform the above mentioned jobs.
13. Report writing.
14. Maintenance of stocks and inventories of the instruments and equipment.
15. Collaboration and coordination with the instruments and equipment repair workforce.
16. Any other reasonable and related duty assigned by the Operation Theatre In-charge.

FRAME WORK FOR BACHELOR OF SCIENCE IN SURGICAL TECHNOLOGY (4 YEAR PROGRAM)

➢ Total numbers of Credit hours	136 (HEC recommended: 124-136)
➢ Duration	4 years
➢ Semester duration	16-18 weeks
➢ Semesters	8
➢ Course Load per Semester	15-18 Credit hours
➢ Number of courses per semester	6-7

SCHEME OF STUDIES FOR 4 YEAR BS SURGICAL

Semester/Year	Name of Subject	CODE	Credits Hr
First	BIOCHEMISTRY-I	PMS-601	3+1
	HUMAN PHYSIOLOGY-I	PMS-602	3+1
	HUMAN ANATOMY-I	PMS-603	3+1
	ENGLISH-I	PMS-604	2+0
	PAK STUDIES	PMS-605	2+0
	COMPUTER SKILLS	PMS-606	1+1
			18
Second	BIOCHEMISTRY-II	PMS-607	3+1
	HUMAN PHYSIOLOGY-II	PMS-608	3+1
	HUMAN ANATOMY-II	PMS-609	3+1
	ENGLISH-II	PMS-610	2+0
	ISLAMIC STUDIES	PMS-611	2+0
			16
Third	SURGICAL INSTRUMENTS /EQUIPMENTS ANDBIOSAFTY	SUR-601	2+1
	PATHOLOGY-I	PMS-612	2+1
	MEDICAL MICROBIOLOGY-I	PMS-613	2+1
	COMMUNICATION SKILLS	PMS-615	1+1

	PHARMACOLOGY_I	PMS-614	2+1
	HEAMATOLOGY_1	MLT-601	2+1
			17
Fourth	SURGICAL SETUP AND POSITIONING	SUR-602	2+1
	PHARMACOLOGY -11	PMS-616	2+1
	MEDICAL MICROBIOLOGY-II	PMS-618	2+1
	DIAGNOSTIC IMAGING	RAD-610	1+1

	PATHOLOGY-II	PMS-617	2+1
	BEHAVIORAL SCIENCES	PMS-619	2+0
	STERILIZATION AND DISINFECTION	SUR-603	1+1
			18
Fifth	ADVANCE TRAUMA MANAGEMENT	SUR-619	2+1
	AESTHETIC AND PLASTIC SURGERY	SUR-620	2+1
	ENT SURGERY	SUR-606	2+1

	ANESTHESIA EQUIPMENT	ANS-606	2+1
	CLINICAL OPERATIVE THORACIC SURGERY	SUR-607	2+1
	GENERAL SURGERY	SUR-608	2+1
			18
Sixth			
	CLINICAL OPERATIVE OPTHALMIC SURGERY	SUR-614	2+1

	PERI OPERATIVE CARE	SUR-609	2+1
	CLINICAL OPERATIVE PEDIATRIC SURGERY	SUR-613	2+1
	CLINICAL OPERATIVE GENERAL SURGERY	SUR-610	2+1
	CLINICAL OPERATIVE GYNECOLOGY OBSTETRICS	SUR-611	2+1
	DIAGNOSTIC AND ENDOSCOPIC SURGERY	SUR-612	2+1
			18
Seventh	FUNDAMENTAL OF INFECTION CONTROL	PMS-624	1+1

	RESEARCH METHODOLOGY	PMS-621	2+1
	BIOSTATISTICS	PMS-622	2+1
	CLINICAL OPERATIVE NEURO SURGERY	SUR-615	2+1
	EIPEDIOMOLGY	PMS-623	2+1
	CLINICAL OPERATIVE UROLOGY SURGERY	SUR-616	2+1
			17
Eight	RESEARCH PROJECT/SEMINAR	PMS-626	0+6

	CLINICAL OPERATIVE ORTHOPEDIC SURGERY	SUR-617	2+1
	BIO ETHIC	PMS-625	2+0
	OPERATING ROOM MANAGEMENT	SUR-618	1+1
	SEMINAR	PMS-627	0+1
	TOTAL – 124-136		**14**
	TOTAL CREDIT HOURS		**136**

Mode of Assessment

Assessment Component		Marks Distribution	Total Marks
Theory Exam		Quizzes	
	Internal Assessments	Presentations	10
		Assignments	
			MCQs
	Mid Term Exam		20
			MCQs
	Final Theory Exam		70
	Total		**100**
Practical (OSPE/OSCE)	Internal Practical Evaluation	Observational / interactive	10
			OSPE/OSCE
	Mid Term		20
			OSPE/OSCE
	Final Practical Exam		70
	Total		**100**
Grand Total			**200***

1st SEMESTER COURSES

1. **BIOCHEMISTRY -I**
2. **HUMAN PHYSIOLOGY-I**
3. **HUMAN ANATOMY-I**
4. **ENGLISH-I**
5. **PAK STUDIES**
6. **COMMUNICATION SKILLS**

PMS-601 BIOCHEMISTRY-I Credit Hours: 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:

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

Practicals:

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

Recommended Books

- Harper's BIOCHEMISTRY Robert K. Murray, Daryl K. Granner 28th edition 20
- BIOCHEMISTRY by Dr. U. Satyanarayana, U Chakrapani
- Lehninger Principles of BIOCHEMISTRY, 6E Marks' Essentials of Medical BIOCHEMISTRY A Clinical Approach, Second Edition

PMS-602 HUMAN PHYSIOLOGY-I Credit Hours: 4(3+1)

Course Objectives:

After completion of this course the student will be able to:

- Understand the basic concepts of physiology beginning from the cell organization to organ system function.
- Understand the organization of cell, tissue organ and system with respect to their functions.
- Understand 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

Practicals:

- 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

PMS-603 HUMAN ANATOMY-I Credit Hours: 4(3+1)

Course Objectives

After completion of this course the student will be able to:

- Understand the basic concept of anatomy beginning from the cell organization or organ system function.
- Understand the basic concepts of general anatomy including skeleton and muscular skeleton.
- Understand the anatomy of Thorax Abdomen and pelvis

Course Detail:

Muscular skeletal system(Axial and Appendicle),Axial Skeleton, Different bones of human body, Axial and Appendicle Skeleton, Classification on the basis of development, region and function, General concept of ossification of bones, parts young bone, Blood supply of long bones, Joints Structural Regional and functional classification of joints, Characteristics of synovial joints, Classification of synovial joints, Movements of synovial joints, Muscular System Parts 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's, 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, special senses

practical's:

- Study Axial and Appendicular skeleton on human skeletal model.
- Study muscular skeletal system on human muscular skeletal model.
- Study organs of special senses.
- Study and understand anatomy of Thorax, Abdomen and Pelvis through:
- Human Models
- Video demonstration.

Recommended Books:

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

Reference books:

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

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 PAKISTAN STUDIES (Compulsory) Credit Hours: 2(2+0)

Course Objectives:

After completion of this course the student 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.

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,IndusCivilization,Muslimadvent,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 onwardContemporary 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 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 **COMPUTER SKILLS** **Credit Course: 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 and Window XP/7; MS Office 2007 (Word, Excel, PowerPoint); Internet access and different data bases available on the internet; Email.

Recommended Books:

- Computer science by Muhammad Ashraf, edition 1st 2010

2nd SEMERTER COURSES

- **BIOCHEMISTRY-II**
- **HUMAN PHYSIOLOGY-II**
- **HUMAN ANATOMY-II**
- **ENGLISH-II**
- **ISLAMIC STUDIES**

PMS- 607 BIOCHEMISTRY- II Credit hours 4(3+1)

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.

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), 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 o f A L T , A S T , A L P , G G T , 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

Books:

BIOCHEMISTRY by Dr. U. Satyanarayana, U Chakrapani
Marks' Essentials of Medical BIOCHEMISTRY A Clinical Approach, Second Edition Harper's
Illustrated MEDICAL 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

PMS -608 Human Physiology-II Credit Hours: 4(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, 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

PMS -609 HUMAN ANATOMY-II Credit Hours: 4(3+1)

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.

Practicals:

Study and understand the anatomy of Upper limb, Lower limb, Head and Neck through:

1. Human Models
2. Video demonstration
3. Study radiographs of upper and lower limb.

Recommended Books: Essential

books (text 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 books

- Netter Atlas of human anatomy 5th Edition Saunders.
- Gray's Anatomy for students 2nd Edition Drake Vogal Mitcell.
- BD. Churasia Human Anatomy (All regions)

PMS-610 ENGLISH –II Credit Hours: 2(2+0)

Course Objective:

After completion of this course the student will be able to:

- To enhance students writing, reading and listening skills.
- To enhance language skills and develop critical thinking.

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 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 Brinand and Francoise Grellet. Oxford Supplementary Skills. Fourth Impression 1993. ISBN 0 19 435405 7 Pages 20-27 and 35-41.
- Reading. Upper Intermediate. Brain Tomlinson and Rod Ellis. Oxford Supplementary Skills. Third Impression 1992. ISBN 0 19 453402 2.

PMS -611 ISLAMIC STUDIES Credit Hours: (2+0)

Course Objectives:
After completion of this course the student will be able to:

- Learn about Islam and its application in day to day life.
- Provide Basic information about Islamic Studies
- Enhance understanding of the students regarding Islamic Civilization
- Improve Students skill to perform prayers and other worships
- Enhance the skill of the students for understanding of issues related to faith and religious life**.**

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

3rd SEMESTER COURSE

1. **SURGICAL INSTRUMENTS /EQUIPMENTS AND BIOSAFTY**
2. **GENERAL PATHOLOGY-I**
3. **MEDICAL MICROBIOLOGY-1**
4. **COMMUNICATION SKILL**
5. **PHARMACOLOGY-1**
6. **HEAMATOLOGY-1**

SUR-601 SURGICAL EQUIPMENT/instrument AND BIOSAFETY Credit Hours: 3(2+1)

Course Objectives:

After completion of this course the student will be able to:

- Enable to identify surgical instruments.
- Enable to know about the aseptic technique and principle.
- Introduction concept of quality assurance in health care field.
- Enable student to take precautionary measurement.

Course Outlines:

Common surgical Equipment and Furniture: Aseptic (sterile) Technique, Operating room Attire, sterile Attire, Operating room Table, operating room different parts, Operating table attachment, Operating room furniture,

Electro Surgical unit, Argon beam coagulation, Auto transfusion machine.

General Surgical Supplies: Surgical sponges, syringes, Tubes, drains, catheter and post-op splints, Suture and suture Needles, Laser and types of laser.

Environmental Hazards and Biosafety, Classification of Hazards, Physical Hazard and safeguard: Environmental Factor, Body Mechanics, Ionizing, Radiation, Patient safety, on Ionizing radiation, Electricity, Safeguard, Fire Explosions ,Fire safety, Chemical Hazards And safe guards :Anesthesia gases ,Sterilizing Agents, Safe handling of Cytotoxic Agents.

Biologic Hazards and Safe guard: Infective wastes, Biohazards, Reproductive hazards, Risk Management for Quality assurance.

Practicals:

1. Exercise to identify instrument immediately.
2. Assessment of instrument efficiency.
3. Preparation of surgical instrument box before surgery.
4. Exercise to know about operating room attire.
5. Precautionary measures to avoid physical, chemical and biological hazards.
6. Handling emergency situations like fire ad explosions.

7. Inspecting anesthesia gas cylinders and gas leakage.

Recommended Books:

- Synopsis A hand guide of surgical instruments.
- Colleen J Rutherford,RN,CNOR Educator.Differetiating Surgical Equipment and supplies
- Nancy Marie Phillips, 11th edition.Berry Kohn's Operating Room Technique.
- Maxine A.GoldMan, Room,3rd Edition.Pocket guide to the Operating Room.
- Joannaa catcher fuller, 6th edition, surgical technology principle and practice

PMS-612 PATHOLOGY-I Credit Hours: 3(2+1)

Course Objectives:

After completion of this course the student will be able to:

- Understand different pathological processes
- Processes blood coagulation and embolism.
- Understand the mechanism of wound healing and regeneration

Course Contents:

Introduction to pathology, Cell injury, Cellular adaptation, Acute Inflammation, Chronic Inflammation, Cell Repair & Wound Healing, Regeneration & Repair, Hemodynamic Disorders**,** Edema, Hemorrhage, Thrombosis, Embolism, Infarction &Hyperemia, Shock, compensatory mechanism of shock, possible consequences of thrombosis & difference between arterial & venous emboli, Neoplasia, Dysplasia, benign and malignant neoplasms, metastasis

Practicals:

- Estimation of Prothrombin Time
- Estimation of Clotting Time
- Estimation of Bleeding Time
- Estimation of Activated Partial Thromboplastic Time

Recommended Books:

- Kumar, Abbas and Aster; 9th edition. Robbins Basic Pathology.
- Review of general pathology by Muhammad Firdous 9th edition
- Short textbook of pathology 3rd edition by Inam Danish

MLT—601 HEMATOLOGY-I Credit Hours: 3(2+1)

Course Objectives:

After completion of this course the students will be able to

- Understand the basic concepts in Hematology and acquire skills in practical work
- Understand the latest advancements in the field of hematology

Course Contents:

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 factor effecting on erythropoiesis, granulopoiesis, different stages and factor effecting on granulopoiesis, megakariopoiesis, different stages and factor effecting on megakariopoiesis, introduction to Hemoglobin structure, synthesis and function, complete blood count and its importance, morphology of red blood cells and white blood cells, introduction to anemia and classification of anemia, 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, neutropenia, condition related to neutropenia, eosinophilia, condition related to eosinophilia, eosinopenia, condition related to eosinopenia, monocytosis, condition related to monocytosis, monocytopenia, condition related to monocytopenia, lymphocytosis, condition related to lymphocytosis, lymphopenia, condition related to lymphopenia, basophilia, condition related to basophillia, introduction to hemostasis, mechanism of hemostasis, function of platelets and coagulation factors, coagulation cascade, quantitative disorder of platelets, qualitative disorder of platelets.

Practical:

- Collection of blood sample
- Preparation and staining of peripheral blood smear
- Total leucocyte count, RBC count
- Determination of absolute values
- Differential leucocyte count; platelets count and reticulocytes count
- Measurement of ESR
- Determine bleeding time, prothrombin time, activated partial thromboplastin time.

Recommended Books:

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

PMS-615 COMMUNICATION SKILLS Credit Hours: (1+1) 2

Course Objectives

After completion of this course the student 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 to 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, Public Speaking and Presentation skills, Effective public presentation skills, Audience analysis, Effective argumentation skills, Interview skills.

Recommended Books:

- Inter-personal communication Paperback by Kory Floyd
- Reading into writing 1: English for Academic purpose: A handbook-Workbook for college freshman English (Mass Market Paperback) by Concepcion D. Daduflaza
- Lecture notes/ Presentation

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

Course objectives:

After completion of this course the student will be able to:

- Introduce the basic concepts in bacteriology and mycology.
- Introduce the common bacterial and fungal infections.
- Introduce the 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 Equipment's 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.

PMS- 614 Pharmacology- I Credit hours 3(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, NSAID, Opioids, Drugs Affecting Endocrine system(Corticosteroids, Thyroid and Anti Thyroid), 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:

Lippincott s pharmacology (text book) by Mycek 6th Edition published by Lippincott Raven 2012. I Katzung textbook of pharmacology (Reference Book) by Bertram Katzung 12th Edition, Published by Appleton.

4th SEMESTER COURSE

1. **SURGICAL SETUP AND POSITIONING**
2. **BEHAVIORAL SCIENCE**
3. **MEDICAL MICROBIOLOGY-II**
4. **DIAGNOSTIC IMAGING**
5. **PATHOLOGY-II**
6. **PHARMOCOLOGY-11**
7. **STERILIZATION AND DISINFECTION**

SUR- 602 SURGICAL SETUP AND POSITIONING Credit Hours: 3(2+1)

Course Objectives:

After completion of this course the students will be able to

- Understand various operation theatre designs
- Enable future technologists to regulate Operation theater(OT) according to standard protocols
- Able to suggest operation theaters designs to meet requirements
- Practice aseptic techniques in patient draping
- Ensure suitable patient position according to the surgical exposure required
- Prevent nerve damage during surgeries

Course contents:

Physical Layout of surgical Suite: Construction or Renovation planning and design team, Principles in construction and renovation planning, Types of physical Plant design, Location, Transition Zones: Preoperative Check in unit, Preoperative holding Area, Induction room ,Post Anesthesia Care unit, Peripheral Support Areas, Operating room Size, Sub sterile room.

History and back ground, Anatomic and physiologic consideration, Equipment for Surgical Positions, Supine, Trendelenburg position, Reverse Trendelenburg position, Fowler position, Lithotomy position, Prone position, Modified prone position Modifications for Individual Patient Needs, Physical preparation and draping of the surgical site.

Practicals:

- Study Operation Theater designs.
- Identify errors in present operation theater designs.
- Use of different parts of OT table.
- Use of OT table attachments and frame work for patient positioning.
- Surgical site exposure and draping.

Recommended Books:

- Nancy Marie Phillips, 12th edition. Berry Kohn's Operating Room Technique.
- 25th Edition volume 1.Bailey and love's Short practice of surgery

RAD-610 Diagnostic Imaging Credit Hours: 2(1+1)

Course objectives:

- To equip the student with professional knowledge,skill, techniques &ethical values to enable them
- To apply their acquired expertise in diagnostic imaging.
- Student will be able to provide patient care in imaging diagnostic study.
- To deliver the efficient 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:

- Diagnostic Imaging by Peter Armstrong Martin Waste Andrea G Rockall 6th Edition.
- Clinical Radiology Made ridiculously simple.

PMS—617 PATHOLOGY-II Credit Hours: 3(2+1)

Course Objectives:

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

Course contents:

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's:

1. Helicobacter pylori test
2. Diagnosis methods of UTI
3. Determination of renal function tests
4. Determination of liver function tests
5. 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

PMS—616 PHARMACOLOGY-II Credit Hours: 3(2+1)

Course objectives:

After completion of this course the student will be able to:

- Provide quality patient care in routine as well as advanced procedures.
- Understand the mechanism of drug action at molecular as well as cellular level, both desirable and adverse.
- 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, Chemotherapeutics, drugs ([Anti-protozoal, Anti-Malarial], Anti-Fungal, Anthelmintic), Antibiotics (Penicillin's, cephalosporin's, macrolides, aminoglycosides, fluroquinolones), 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 2ndEdition published by Lippincott Raven 2000.
- Katzung textbook of pharmacology (Reference Book) by Bertram Katzung 8th Edition, Published by Appleton.dec 2007.

SUR-603 STERILIZATION AND DISINFECTION Credit Hours: 2(1+1)

Course Objectives:

After completion of this course the students will able to

- Differentiate between disinfection and sterilization
- Demonstrate sterilization techniques.
- Inspection of sterilization level of instruments and operation theater (OT) environment

Course Contents:

- Sterilization & Disinfection, Methods of Sterilization(physical and chemical) ,Preparation & Packing, Designing Sterilization Process, Auto Clave for instrument linen and perishable items, Chemical Sterilization & Disinfection, Testing the Process of Sterilization and Central Sterile Supply Department(CSSD), Disinfecting Solution

Practicals:

- Selection of sterilization techniques for specific surgical items
- Operation of autoclave
- Arrangement and packing of instruments
- Methods of assessing sterilized items
- Scrubbing techniques

Recommended Books:

- Nancy Phillips, 12th Edition. Berry Kohn's Operating room Technique.
- Colleen J. Rutherford. Differencing surgical equipment and supplies

PMS-618 MDICAL MICROBIOLOGY-II (Non-MLT) Credit Hours: 3(2+1)

Course objectives:

After completion of this course the student will be able to:

- Introduce the basic concepts in virology and parasitology.
- Introduce the common viral and parasitic infections.
- Introduce the 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.
- Jawetz, Melnick, & Adelberg's Medical Microbiology. Brooks, G., Carroll, K., C., Butel, J., &

Morse, S., 26th ed. McGraw-Hill Medical, 2012.

PMS-619 BEHAVIORAL SCIENCE Credit Hours: 3(2+1)

Course Objectives

After completion of this course the student will be able to:

- Conducting diagnostic interviews
- 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

5th SEMESTER COURSE

1. **ADVANCE TRUAMA MANAGEMENT**
2. **CLINICAL OPERATIVE THORACIC SURGERY**
3. **ENT SURGERY**
4. **ANESTHESIA EQUIPMENT**
5. **AESTHETIC AND PLASTIC SURGERY**
6. **GENERAL SURGRY**

SUR-619 Advance Trauma Management Credit Hours: 3(2+1)

Course Objectives:

At the end of this course the student will be able to:

1. Understand the priorities of trauma management
2. Able to rapidly and accurately assess patients' needs
3. Able to resuscitate and stabilize trauma patients
4. Provide care to the critical ill patient.

Course Outlines:

Assessment and Management: Primary and secondary Survey, Airway and Ventilator Management, Shock and Hemorrhagic Control, Abdominal Trauma, Head Injury, Spine and Spinal Cord Trauma, Musculoskeletal trauma, Pediatric Trauma, Burns , Trauma management in Pregnancy and in Peeds

Practicals:

- Primary and Secondary Survey.
- Airway clearance.:
- Cricothyroidotomy
- Passing oral,nasal tubes and ETT.
- Tracheostomy
- Chest tube intubation.
- Log role method
- Shock management:
- IV line Maintenance
- Venous cut down
- Catheterisation
- Suturing techniques
- Assesment of musculosketal system.

Recommended Book:

- 25th Edition.Bailey and love's Short practice of surgery
- Prof. DrArshadCheema,KEMU Trauma Course Manual
- ATLS, 10 edition, by American college of surgeon

SUR-606 OTORHINOLARYNGOLOGIC / ENT SURGERY Credit Hours: 3(2+1)

After completion of this course the student will be able to:

- The relevant anatomy and physiology of ear, nose and upper aero digestive tract.
- To assess different surgical procedure.
- Identify the names and uses of otorhinolaryngology instruments, supplies and drugs.
- Discuss the immediate postoperative care and possible complication of the otorhinolaryngogolic procedure.

Course Outlines:

Anatomy of the Ear, Nose, Sinuses, Throat, its Special Preoperative Considerations, Special Instruments, Supplies, Intraoperative Preparation,

Ear Procedures, Myringotom, Myringoplasty/Tympanoplasty, Mastoidectom, Stapedectomy Stapedotomy, Cochlear Implants .Rhinitis/Sinusitis, Nasal Polyps, Hypertrophied Turbinate's,, Deviated Nasal Septum, Septal Perforation ,Epistaxis,

Nasal Procedures, Submucous Resection (SMR), Polypectomy, Intranasal Antrostomy, Internal Maxillary Artery, Ligation, Sinus Procedures, Caldwell-Luc, Ethmoidectomy, Sphenoidectomy, Drainage of the Frontal Sinus, Sinus Endoscopy, Polypoid Corditis or Vocal Cord Polyps, Vocal Cord Nodules, Vocal Cord Granulomas, Laryngeal Neoplasms, Foreign Bodies removal

Aerodigestive Tract Procedures .Adenoidectomy, Tonsillectomy, Incision and Drainage of a Peritonsillar Abscess Uvulopalatopharyngoplasty, Thyroidectomy, Radical Neck Dissection with Mandibulectomy

Practicals:

- Preparations for surgery
- Hand washing, scrubbing and gowning
- Use of surgical checklists including WHO
- Administration of local anesthesia
- Incision of skin and subcutaneous tissue
- Closure of skin and subcutaneous tissue
- Types of surgical knots
- Hemostasis:

- Surgical techniques
- Use of drains:
- Biopsy techniques
- Principles of anastomosis

- Consent, surgical safety checklist application
- Patient positioning and draping.
- Surgical, skills, anastomosis and hemostasis skills.
- Suturing and drain tubes handling.

Recommended Book:

- Comuswhalan.Assisting at surgical operations,practical guide.
- Nancy Marie Phillips, 11th edition.Berry Kohn's Operating Room Technique.
- Colleen J Rutherford,RN,CNOREducator.Differetiating Surgical Equipment and supplies
- Maxine A.GoldMan, Room,3rd Edition. Pocket guide to the Operating Room.
- Abdul hameed dogar a comprehensive approach to the principle of general surgery 4th edition.
- 25th Edition.Bailey and love's Short practice of surgery
- Comos wahallan, practical guide, assisting at surgical operation.
- Joannaa catcher fuller, 6th edition, surgical technology principle and practice
- Teri L JNUGE, Ben D. Price, surgical technology for the surgical technologist.

ANS- 606 ANESTHESIA EQUIPMENT Credit Hour: 3 (2+1)

Course objective:

After completion of this course the student will be able to:

- Expected to understand the working principles various tools used for anesthesia provision, to ensure safe practice.
- Demonstrate abilities in managing technical fault arise intra-operatively and correct the calibration of different anesthetic instruments/equipment.

Course contents:

Anesthesia machine its different parts, working principles, medical gas supply devices, vaporizers, pulse oximeter, face masks and laryngoscope, breathing circuits, anesthesia ventilator and working principles, monitoring devices, manual resuscitation bags, defibrillator and its working principles, methods of autoclaving, glucometer, nerve stimulator, laryngeal mask airway, endo tracheal tubes(ETT), airways(oral and nasal),suction machine, infusion pump, reservoir bags, resuscitator bags, thermometer ,spagymometer, stethoscope, oxygen purity meter,

Operation theater table, flexible endoscope, intravenous cannulas, spinal needle, epidural catheter, Magill gag, Magill incubating forceps, latest technology.

practical's:

- Arrangement of anesthesia Machine
- Anesthesia Machine safety system
- Sterilization of anesthesia equipment
- Arrangement of anesthesia breathing circuits
- Use of stethoscope and blood pressure apparatus

Recommended Books

- Anesthesia equipment principles and applications.Ehrenwerth,.jan,.Eisenkraft,.james,.Berry,.james,.2nd edition.
- Manual of anesthesia. K,.Arun,.4th edition. paul Jaypee brothers medical publisher(p) Ltd.

- Essential of Anesthesia equipment. Sakaih,.Bahal al,. & Stacey,.Simon,. 3rd edi.
- Clinical anesthesiology. Morgan & Mikhail's,. 5TH edit.
- Text book of Anesthesia. Aitkenhead,.Alan,.R,. 5TH edition.

SUR-620 Aesthetic and Plastic surgery Credit hour (2+1) 3

Course Objective:

After completion of this course the student will be able to:

- Gain basic knowledge about plastic surgery and Identify pertinent anatomy of the integumentary system.
- Participate in surgical procedures as surgical first assistant.
- Describe the techniques of skin and tissue grafting
- Prepare OT from instruments to theater for specific surgeries according to requirement.
- Discuss the Different autografts, allografts, and xenograft

Course Outlines:

Introduction to aesthetic and plastic surgery: surgical anatomy, terminology related to plastic surgery, special features of plastic surgery, general considerations in plastic surgery, Psychological Support for Patients Undergoing Plastic and Reconstructive Surgery, Categories of Plastic and Reconstructive Surgery

Skin and Tissue grafting: skin graft knives and dermatomes, types of skin and tissue grafts, Pedicle flaps, microsurgical free-flap transfer replantation of amputated parts, General considerations of all tissue grafts.

Head and Neck plastic and reconstructive procedures: Craniofacial Surgical Procedures, Maxillofacial and Oral Surgical Procedures.

Aesthetic procedures: Blepharoplasty, Otoplasty, Rhinoplasty, Mentoplasty, Rhytidoplasty, Face transplantation, soft tissue augmentation, Hair Replacement, Liposuction, Abdominoplasty.

Aesthetic and plastic surgery procedures of breast: Augmentation Mammoplasty, Reconstructive Mammoplasty, Reduction Mammoplasty, Reduction of male breast.

Scars, Dermabrasion, Skin Cancer, Mohs Micrographic surgery, Burn (Classification, Estimation of burn wound, Initial care, Methods of surgical Treatment.

Practical:

- Investigations required for particular case.
- Consent, surgical safety checklist application
- Patient positioning.
- Checking instrument and equipment's efficiency before procedure.
- Patient positioning and draping.
- Surgical skills, anastomosis and hemostasis skills.
- Suturing and drain tubes handling.

Recommended books:

- Comuswhalan. Assisting at surgical operations, practical guide.
- Nancy Marie Phillips, 11th edition. Berry Kohn's Operating Room Technique.
- Colleen J Rutherford, RN, CNOR Educator. Differentiating Surgical Equipment and supplies
- Maxine A. Gold Man, Room, 3 rd Edition. Pocket guide to the Operating Room.
- 25th Edition. Bailey and love's Short practice of surgery

SUR-607 CLINICAL OPERATIVE THORACIC SURGERY Credit Hours: 3(2+1)

Course Objectives:

After completion of this course the student will be able to:

- Gain basic knowledge of thoracic surgery.
- Participate in surgical procedures as surgical first assistant
- Prepare OT from instruments to theater for specific surgeries according to requirement.

Course Outlines:

Key and Term related to Thoracic surgery, Anatomy and physiology of Thorax, Special Feature of Thoracic surgery, Special Thoracic instruments.

Endoscopic Thoracic surgical Procedures: Bronchoscopy, Special instrument which are used in Bronchoscopy, Airway stent, Mediastinoscopy, Thorascopy.
Open Thoracic surgical procedures: Thoracotomy, different incisional approaches, Poster lateral Thoracotomy, Anterolateral Thoracotomy, Median sternostomy, Partial sternotomy, parasternotomy.
Lung assists Devices: Extracorporeal Membrane oxygenator, Intravascular Oxygenator.
Rib Resection, Mediastinotomy, Correction of pectus Deformity, Lung Resection, Lobectomy, Thoracoplasty, Thymectomy.
Chest Trauma
Intra Thoracic Esophageal Procedures
Overview of Cardiac injuries
Airway Obstruction
Myocardial infarction
Cardiopulmonary bypass
Heart transplantation
Complications of Thoracic Surgery
Post-operative complications in Cardiac surgery

practical's:

- Investigations required for particular case.
- Consent, surgical safety checklist application
- Patient positioning.
- Checking instrument and equipment's efficiency before procedure.

- Patient positioning and draping. Surgical skills, anastomosis and hemostasis skills.
- Suturing and drain tubes handling.
- Anesthesia recovery.

Recommended Book:

- Comuswhalan .Assisting at surgical operations, practical guide.
- Nancy Marie Phillips, 11th edition.Berry Kohn's Operating Room Technique.
- Colleen J Rutherford,RN,CNOREducator. Differetiating Surgical Equipment and supplies
- Maxine A.GoldMan, Room, 3rd Edition. Pocket guide to the Operating Room.

SUR-608 GENERAL SURGERY Credit Hours : 3(2+1)

Course Objectives:

After completion of this course the student will be able to:

- Provide an overview regarding operating room attire.
- Provide knowledge regarding general surgical procedure.
- How the patient prepare before surgery.
- Provide knowledge regarding sterilization and disinfection.

Course outline.

Aseptic and scrubbing technique, Patient Assessment, Layout of Standard History taking, Examination, Investigations, Introduction to Surgery Importance of imaging in surgical conditions, Interventional Radiology, Diagnostic Process.

Arterial Disorders Arterial Stenosis or Occlusion, Arterial Dilatation, Aortic Aneurysm, and it, s surgical management.

Venous Disorders Venous Incompetence, Varicose Veins, Venous Thrombosis and surgical management.

Musculoskeletal Disorders Fractures of the Bones, Dislocation of Joints, Describing a dislocation or fracture, Complications of dislocation or fracture and it's surgically management.

The Cranium Head & Brain Injury, Hydrocephalus, Intracranial Tumors.

The Breast Investigations, Benign breast disease, malignant tumors of the breast.

Diseases of the GIT Congenital abnormalities of the Esophagus, Splenomegaly &Splenectomy, Stones &Stricture in Bile duct, Chelethiasis, Cholecystectomy, Vermiform Appendix, Appendicitis, Appendectomy Anorectal Disorders.

Diseases of the Genito Urinary System Imaging investigations of the Genital tract, Congenital abnormalities of Kidneys & renal tract, Hydronephrosis, Renal & Ureteric & Bladder Calculi, Urethral Stricture, Varicocele& Hydrocele.

Biopsy, Hernia, Hernioraphy, Herniotomy,

Practicals:

- Practice Scrubbing techniques.
- Proper Gowning and gloving.
- To gain knowledge about different surgical procedure.
- Draping and surgical field preparation.
- How to apply surgical attire.
- To assess the different surgical procedure.

- Setting surgical instruments on trolley.

Recommended Books:

- Nancy Marie Phillips, 11th edition.Berry Kohn's Operating Room Technique.
- 25th Edition volume 1.Bailey and love's Short practice of surgery

6th SEMESTER COURSES

1. **CLINICAL OPERATIVE PEDIATRIC SURGERY**
2. **CLINICAL OPERATIVE OPTHALMIC SURGERY**
3. **DIAGNOSTIC AND ENDOSCOPIC SURGERY**
4. **PERI OPERATIVE CARE**
5. **CLINICAL OPERATIVE GYNE AND OBS**
6. **CLINICAL OPERATIVE GENERAL SURGERY**

SUR-613 CLINICAL OPERATIVE PEDIATERIC SURGERY CREDIT Hr.3(2+1)

Course Objective:

After completion of this course the student will be able to:

- Know the pediatric patient care in term of developmental stages.
- Knowledge about pediatric anesthesia.
- Know common several surgical procedures that are performed on pediatric patients.

Course Content:

Key terms and definition related to pediatric surgery, Congenital Anomalies, Acquired Disease, Peri Operative Assessments of the Pediatric patient, Fluid and Electrolyte Balance Consideration, Pediatric Anesthesia, Intra operative Pediatric Patient care consideration.

General Surgery procedures: Endoscopic procedure, Biliary Atresia, Esophagus Atresia, Imperforrate Anus, Intussusception, Pyloromyotomy, Hreniorrhaphy, Omphalocele, Gastroschisis, Appendectomy, Spleenectomy, Bezoors.

Genito Urinary Surgery: Cysotocopy, Nepherectomy, Nephrostomy, Pyeloureteroplasty, Wilm,s tumor, Nuerogenic Bladder, Extrophy of the Bladder, Ureteral Re-implantaion, Urethral repair, Orchidopexy, Circumcission, Fracture, Tendon repair, Congenital dislocation, Scoliosis.

ENT surgery: Myringtomy, Adenoidectomy, Tonsillectomy, Tympanoplasty, Cleft lip, Cleft palate, Tracheostomy, Hemangioma, Otoplasty, Craniosynostosis, Encephalocele, Hydrocephalus, Myelomeningocele, Spina Bifida, Pectus excavation, Co-arctation of Aorta, PDA, VSD, ASD ,Atrioventricular canal defect, Tetrology of fallot, Truncus arteriosis, Post pediatric care.

Practical's:

- Investigations required for particular case.
- Consent, surgical safety checklist application
- Patient positioning.
- Different pediatric procedure assists.
- Making of different pediatric procedure position.
- Checking instrument and equipments efficiency before procedure.
- Patient positioning and draping.Surgicalskills,anastomosis and hemostasis skills.

- Suturing and drain tubes handling.
- Anesthesia recovery.

Recommended Book:

- Comuswhalan.Assisting at surgical operations,practical guide.
- Nancy Marie Phillips, 11th edition.Berry Kohn's Operating Room Technique.
- Colleen J Rutherford,RN,CNOR Educator.Differetiating Surgical Equipment and supplies

SUR-609 PERI OPERATIVE CARE Credit Hours: 3(2+1)

Course Objectives:

After completion of this course the student will be able to:

- Concept regarding pre, intra and post-Operative care.
- Enable to manage surgical patients peri-operatively.
- Provide concept of fluid and Electrolyte requirements

Course Contents:

Professional Ethical values of Peri-operative staff

Care of the Peri-operative environment

Pre-operative Nutritional assessment

Fluids and Electrolytes

Fluid and Nutritional consequence of intestinal resection,

Artificial nutritional support, Total parenteral nutrition.

Pre-Operative care:

History taking, Physical examination, Investigations, Treatment plan, Informed Consent,

Pre-operative management of high surgical risks

Intra Operative care: Aseptic measures

Gowning, Gloving, suturing, Basic surgical skills and Anastomosis.

Post-Operative Care:

Patient Recovery,

Assurance of Air Way, Breathing and circulation,

Post-operative Patient positioning

Monitoring of complications,

Monitoring of Vitals and oxygenation,

Shifting of the patient to ward

.

Practicals:

- Introduction, history taking
- Physical examination.
- Investigations
- Fluid management/blood availability
- Patient counseling
- Transfer to OR.
- Shifting to OT table
- Surgical safety checklist application.
- Handling Tubes

Recommended Book:

- Comuswhalan.Assisting at surgical operations,practical guide.
- Nancy Marie Phillips, 11th edition.Berry Kohn's Operating Room Technique.
- Colleen J Rutherford,RN,CNOREducator.Differetiating Surgical Equipment and supplies
- Maxine A.GoldMan, Room, 3rd Edition. Pocket guide to the Operating Room.

SUR-614 CLINICAL OPERATIVE OPTHALMIC SURGERY Credit Hours 3(2+1)

Course Objectives:

After completion of this course the student will be able to:

- Identify the pertinent anatomy of the eye and surrounding basic structures.
- Describe the different procedure performed on the eye.
- Discuss the advantaged and disadvantaged of intraocular lens implantation.
- Prepare OT from instruments to theater for specific surgeries according to requirement.

Course Outlines:

Keys terms and definition related to ophthalmic surgery, anatomy and physiology of the eye, ophthalmic surgical patient care, special feature of ophthalmic surgery, ocular surgical procedure.

Extra ocular procedure, removal of neoplasm of the eyelid, correction of ptosis, blepharoplasty, lacrimal apparatus, eye orbit, surgical removal of eye, cornea, keratoplasty, phototherapeutic keratectomy, refractive keratoplasty.

Intraocular procedure, iris, excision of iris, glaucoma, cataract, intra capsular extraction, linear extraction, phacoemulsification, implantation of intraocular lens, retina, repair of detached retina, laser therapy, photocoagulation, vitrectomy, eye injuries, ophthalmic laser.

practical's:

- Investigations required for particular case.
- Consent, surgical safety checklist application
- Patient positioning.
- Checking instrument and equipment's efficiency before procedure.
- Patient positioning and draping.
- Surgical, skills, anastomosis and hemostasis skills.
- Suturing and drain tubes handling.

- Anesthesia recovery.

Recommended Book:

- Comuswhalan. Assisting at surgical operations, practical guide.
- Nancy Marie Phillips, 11th edition.Berry Kohn's Operating Room Technique.
- Colleen J Rutherford, RN, CNOR Educator. Differentiating Surgical Equipment and supplies
- Maxine A. Gold Man, Room, 3rd Edition. Pocket guide to the Operating Room.
- 25th Edition. Bailey and love's Short practice of surgery

SUR-610 CLINICAL OPERATIVE GENERAL SURGERY Credit Hours : 3(2+1)

Course Objectives:

By the end of this course student will be able:

- Gain basic knowledge of general surgery
- Participate in surgical procedure as surgical first assistant.
- Prepare OT (Operation theatre) from instruments to theater for specific surgeries according to requirement.

Course Outlines:

Special Considerations for General Surgery, Breast procedures, Abdominal surgery, Biliary tract procedures, Liver Procedures, Splenic procedures

Pancreatic procedures. Esophageal procedures, Gastro intestinal surgery, Gastric Procedures, Intestinal Procedures ,Complications of Abdominal Surgery, Anorectal procedures ,Excision of Pilonidal Cysts and sinuses, Hernia procedures, Amputations of Extremity.

Practicals:

- Investigations required for particular case.
- Consent, surgical safety checklist application
- Patient positioning.
- Checking instrument and equipment's efficiency before procedure.
- Patient positioning and draping.
- Surgical first assistance for all general surgical procedures
- Surgical skills, anastomosis and hemostasis skills.
- Suturing and drain tubes handling.
- Anesthesia recovery.

Recommended Book:

- Comuswhalam, Assisting at surgical operations, practical guide.
- Nancy Marie Phillips, 11th edition. Berry Kohn's Operating Room Technique.

- Colleen J Rutherford,RN,CNOR Educator. Differentiating Surgical Equipment and supplies.
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SUR-612 DIAGNOSTIC AND ENDOSCOPIC SURGERY Credit Hours: 2(1+1)

Course Objectives:

After completion of this course the student will be able to:

- Provide knowledge and skills regarding diagnostic procedures.
- Handle latest technology machines being used in surgical set up.
- Enable surgical technologists to perform minor diagnostic procedures independently.

Course Outlines:

Introduction to minimal invasive surgery, Patient care consideration for diagnostic procedure, Pathologic examination: Biopsy and its different types.

Diagnostic procedure of Abdominal: Abdominal laparoscopy, choledocoscopy , ERCP, cholengiogram, Cholangiography, Esophagoscopy, gastroscopy, colonoscopy, sigmoidoscopy, laparoscopic fundoplication, Diagnostic proctoscopy.

Diagnostic procedure of Thoracic: Bronchoscopy, Mediastinoscopy, Thorascoscopy, Bronchography.

Diagnostic procedure of Bones: Arthroscopy, Arthrography,

Diagnostic procedure of Genital Urinary: Diagnostic cystoscopy, URS, Nephroscopy, Urethroscopy , different Endoscopic machine name.

Mammography, Ventriculography, Angiography, Arteriography, Myelography, Urography, cystography, Cytourethrography,

practical's:

- Cleaning and disinfection of scopes and cannulas.
- Standard Aseptic solution preparation.
- Sterilization of scopes.
- Perform minor surgical diagnostic procedures

- Tissue Biopsy: True cut, needle biopsy

Recommended Book:

- Nancy Marie Phillips, 11th edition. Berry Kohn's Operating Room Technique.
- Colleen J Rutherford, RN, Educator. Differentiating Surgical Equipment and supplies
- Maxine A.GoldMan, Room, 3rd Edition. Pocket guide to the Operating Room.

SUR-611 CLINICAL OPERATIVE GYNECOLOGY OBSTETRICS Credit Hours: 3(2+1)

Course Objectives:

By the end of this course student will be able to:

- Gain basic knowledge of gynecology and obstetrics.
- Participate in surgical procedures as surgical first assistant.
- Prepare OT from instruments to theater for specific surgeries according to requirement.

Course Contents:

Anatomy and physiology of the female reproductive System, Gynecology General Consideration,VulvarProcedure,VaginalProcedure,AbdominalProcedures,abdominal hysterectomy, pelvic exenteration, procedures involving fallopian tubes, Perioperative Obstetrics ,threatened abortion, aborted pregnancy, cesarean birth ,prenatal testing, special considerations.

practical's:

- Investigations required for particular case.
- Consent, surgical safety checklist application
- Patient positioning.
- Checking instrument and equipment's efficiency before procedure.
- Patient positioning and draping.
- Surgical skills, anastomosis and hemostasis skills.
- Suturing and drain tubes handling. Anesthesia recovery.

Recommended Book:

- Nancy Marie Phillips, 11th edition. Berry Kohn's Operating Room Technique.
- Colleen J Rutherford, RN, CNOR Educator. Differentiating Surgical Equipment and supplies
- Maxine A. Gold Man, Room, 3rd Edition. Pocket guide to the Operating Room.

7th SEMESTER COURSE

1. **CLINICAL OPERATIVE UROLOGY SURGERY**
2. **RESEARCH METHODOLOGY**
3. **CLINICAL OPERATIVE NEUROLOGICAL SURGERY**
4. **EPIDEOMOLOGY**
5. **BIOSTATISTICS**
6. **FUNDAMENTAL OF INFECTIONS CONTROL**

PMS-624 FUNDAMENTAL OF INFECTIONS CONTROL C.H: 2(1+1)

Course objectives:

After completion of this course the student will be able to:

- Introduce the basic concepts in infection control.
- Introduce the infection control principles and practices.
- Introduce the importance of immunization and hand hygiene in infection control.
- Introduce 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:

- Demonstration of hand washing and hand rubbing technique.
- Preparation of different disinfection and antiseptic solutions.
- Demonstration of biomedical waste managements in hospitals.
- Demonstration of cleaning and disinfection of working premises.
- Demonstration of how to handle spills and aseptic handling.
- Demonstration of standard precautions and PPE.

Recommended Books:

- Fundamentals of Infection Prevention and Control: Theory and Practice. Weston, D. Wiley-Blackwell, 2013.
- Sherri's Medical Microbiology: An Introduction to Infectious Diseases. Ryan, K. J., Ray, C. G., 4th ed. McGraw-Hill, 2003.
- District Laboratory Practice in Tropical Countries, Part1 & 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.

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

Course Objectives:

After completion of this course the student will be able to:

- Explain epidemiological terminologies
- Calculate disease risk, prevalence, and incidence
- Select and choose an appropriate study design for epidemiological research
- Identify and cover confounding and Biases in research studies
- Measure the specificity, sensitivity, positive predictive value, and negative predictive value

Course Outlines:

Introduction to Epidemiology and basic terms used in Epidemiology, Epidemiological Triangle, Measures of Disease Occurrence; Incidence and Prevalence, Dynamics of disease transmission, Measurement of disease frequency, risk, rate, ratio, and proportion, Calculation of Mortality and Morbidity, Study Design/Study type i.e. Cross-sectional, analytical cross-sectional, case-control, cohort, case report, case series, RCT, quasi-experiment, survey, and surveillance, Confounding and Biases, Odds ratio and relative risk, Screening and diagnosis, Validity, Reliability, Components of validity: sensitivity and specificity, PPV, and NPV of tests.

practical's:

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

Recommended Books:

- An_Introduction_to_Epidemiology_for_Health_Professionals
- Epidemiology by Leon Gordis 5th Editio

SUR-615 CLINICAL OPERATIVE NEURO SURGERY Credit Hours: 3 (2+1)

Course Objectives:

By the end of this course student will be able:

- Gain basic knowledge of neuro surgery
- Participate in surgical procedure as surgical first assistant.
- Prepare OT from instruments to theater for specific surgeries according to requirement.

Course Outlines:

Different terminology related to Neurology surgery, Anatomy and Physiology of Brain,

Special consideration in Neurosurgery, Method of hemostasis during Neurology surgery, Different position for Neurology surgery.
Surgical procedures of the cranium: Craniectomy, Brain pacemaker, Craniotomy, Cranioplasty , Intra cranial tumor, Excision of an Acoustic Neuroma.
Surgery of Cranial Blood Vessel: Cerebral Revascularization, Artriovenous malformation, Occlusion of an Aneurysm, Stereotaxis, Aspiration, Functional Neurosurgery.
Intracranial Neoplasm, Control of Epilepsy, Cortical Resection, Corpus Collosotomy, Hemispherectomy.
Extracranial procedure:Transsphenoidal procedure, External occlusion of an carotid artery, Surgical Procedures of Head injuries and it,s management.
Craniotomy for intracerebral hematomata.Hydrocephalus Surgical Management Complications of head injuries.
Key and term related to spinal cord surgery, pathology of the vertebra and spinal cord, spinal cord tumors.
Surgical procedure of spinal cord: Discectomy, percutaneous Discectomy, Thoracic spine surgery, Lumber spine surgery, Special interment names which are used in spinal surgery.

Practicals:

- Investigations required for particular case.
- Consent, surgical safety checklist application
- Patient positioning.
- Checking instrument and equipment's efficiency before procedure.
- Patient positioning and draping.
- Surgical skills, anastomosis and hemostasis skills.

- Suturing and drain tubes handling.

Recommended Book:

- Comuswhalan. Assisting at surgical operations, practical guide.
- Nancy Marie Phillips, 11th edition.Berry Kohn's Operating Room Technique.
- Colleen J Rutherford, RN, CNOR Educator. Differentiating Surgical Equipment and supplies
- Maxine A. Gold Man, Room, 3rd Edition. Pocket guide to the Operating Room.

PMS-621 RESEARCH METHODOLOGY Credit hours: 3(2+1)

Course Objectives:

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

- Write a problem statement and research question
- Develop research proposal/synopsis
- Design data collection tools
- Write research project report/thesis
- Disseminate/publish their research findings

Course Contents:

Introduction to research, Types of research; Qualitative and Quantitative Research, Identification of Problem and Problem statement writing or Research question writing, Literature Search and review, Basics of Scientific writing, Synopsis/Proposal writing, Designing of data collection tools i.e. questionnaire, interview, and survey, Ethical principles of Research and their examples to apply those principles, Writing of research report (Abstract, Introduction, Methodology, Results, Discussion, Conclusion), In-text citation and reference writing, reference writing software i.e. Mendley, Plagiarism, Authorship, Introduction to Scientific Journal, how to target journal, Types of Publications i.e. Original article, Narrative and systematic review, meta-analysis, Editorial, letter to the editor

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, Indra Pathmanathan, Ann Brownlee in 1993 by International Development Research Center in New Dehli, Singapore.

SUR-616 CLINICAL OPERATIVE UROLOGY SURGERY CREDI Hr : 3(2+1)

COURSE OBJECTIVE:

After completion of this course the student will be able to:

- Identify the complication and problem related to Genital Urinary system.
- Know different renal surgical procedure.
- Describe the different diagnostic procedure performed for kidney, ureter and bladder.
- Describe the procedure performed for prostate cancer.

COURSE CONTENT:

Anatomy and physiology of kidney, Ureter , Bladder and Urethra, Different terminology related to Urology surgery, Urinary symptom(Hematuria, Anuria, Renal pain , Ureteric pain), Investigation of the Urinary tract, (Urine, imagine, IVU, RUPG, Antegrade pyelography, Urethrography, Venography, Ultrasonography, Cystography), Congenital abnormalities of kidney, Renal pelvis and Ureter, Aberrant Renal vessel, Renal and Ureteric calculus, Hydronephrosis, PCN, PCNL, Pyelolithotomy, Extended pyelolithotomy, Nephrolithotomy, Uretrolithotomy, URS, Ureteric meatotomy, Lithotripsy, ESWL, Push Bang, Neoplasm of kidney, Nephrectomy, Partial Nephrectomy, Radical Nepherectomy, Urethral catheterization, Neurogenic Bladder, Incontinence of Urine, Urodynamic test, Prostatectomy, Bladder stone, Litholopaxy, ERBG, TURP, Supra pubic cystostomy, Hypospadias's, Epispediasis, Meatotomy.

- **practical's:**
- Investigations required for particular case.
- Consent, surgical safety checklist application
- Patient positioning.
- Checking instrument and equipment's efficiency before procedure.
- Patient positioning and draping.
- Surgical skills, anastomosis and hemostasis skills.
- Suturing and drain tubes handling.

Recommended Book:

- Comuswhalan. Assisting at surgical operations, practical guide.
- Nancy Marie Phillips, 11th edition. Berry Kohn's Operating Room Technique.
- Colleen J Rutherford, RN, CNOR Educator. Differentiating Surgical Equipment and supplies
- Maxine A. Gold Man, Room, 3rd Edition. Pocket guide to the Operating Room.

- 25th Edition. Bailey and love’s Short practice of surgery

PMS-622 BIOSTATISTICS Credit Hours: 3(2+1)

Course objectives:

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

- Generate Hypothesis and test their hypothesis
- Use various statistical tests and draw inferences
- Calculate sample size and select adequate sampling method
- Perform statistical analysis by using SPSS
- Present data using illustration

Course Contents:

Introduction to Biostatistics and its types; Descriptive and inferential statistics, Measure of central tendency, Measure of dispersion, Statistical data, Presentation of Data, Sample and population, The concept of sampling, types and methods of sampling, sample distribution, Variable and its types, Hypothesis formulation and testing based on statistics and statistical tests, types of errors, Two-sided and one-sided tests, determination of sample size, the Confidence interval for the mean, Statistical tests their use and interpretation (t-tests, Chi-square ANOVA, Regression and correlation), Preparing and analysis of data in various software i.e. Excel and SPSS.

Practical Work:

- Manual calculation related to the 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 quide to research methodology, biostatistics and medical writing by college of physicians and surgeons Pakistan by WHO collaboration center
- Reading understanding multivanant statistics giimm LG Yard AD PR, publisher American Psychological association.
- Elementary Statistics by Bluman latest Edition.

8th SEMESTER COURSE

1. **CLINICAL OPERATIVE ORTHOPEDIC SURGERY**
2. **BIOETHIC**
3. **OPERATING ROOM MANAGEMENT**
4. **RESEARCH PROJECT**
5. **SEMINAR**

SUR-617 CLINICAL OPERATIVE ORTHOPEDIC SURGERY Credit Hours :3(2+1)

Course Objectives:

After completion of this course the student will be able to:

- Gain basic knowledge of orthopedic surgery.
- Participate in surgical procedures as surgical first assistant.

Course Outlines:

Historical back ground, The Art and Science of orthopedic Surgery

Anatomy and physiology musculoskeletal system, Special features of Orthopedic Surgery, Extremity procedures

Fractures,Joint procedures, Repair of tendons and Ligament,CastApplication,Complications after Orthopedic Surgery

Practicals:

- Investigations required for particular case.
- Consent, surgical safety checklist application
- Patient positioning.
- Checking instrument and equipment efficiency before procedure.
- Patient positioning and draping.
- Surgical skills,
- anastomosis and hemostasis skills.
- Suturing and drain tubes handling.
- Anesthesia recovery.
- Cast Application.
- Implants.
- Use of image intensifiers.

Recommended Book:

- Nancy Marie Phillips, 11th edition.Berry Kohn's Operating Room Technique.
- Colleen J Rutherford,RN,CNOR Educator.Differetiating Surgical Equipment and supplies
- Maxine A.GoldMan, Room,3rd Edition. Pocket guide to the Operating Room.

PMS-625 BIOETHICS Credit Hours 2(2+0)

Course Objectives:

- Use the approach of ethical principle the safety and benefits of the patients.
- Analyze bioethical issues in practices.

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

SUR-618 OPERATING ROOM MANAGEMENT CREDIT HOUR: 2+0

Course objective:

After completion of this course, the student will be known to:

- Manage operating room for different surgical procedure.
- Manage human resource of operating room and duty rota of different staff.
- Understand infection control practices.
- Management of operating room equipment for different surgical procedure.
- Able to evacuate operating room in an emergency and disaster situation.

Course content:

Operating table management, Space management, Human resource Management ,motivation and building a unified team, staffing, delegation of duties, making of duty rota for different staff categories, Equipment Management, new product and equipment evaluation, conflict management, budget and financial management, Infection control and prevention practices in Operating room, fumigation technique, operating room surface culture for microbial presence, Emergency evacuation of the operating room and disaster management, CSSD Management, CSSD layout , different zones of CSSD.

Recommended books:

- Nancy Marie Phillips, 11thedition.Berry Kohn's Operating Room Technique.
- Colleen J Rutherford,RN,CNOREducator.Differetiating Surgical Equipment and supplies
- Joannaa catcher fuller, 6th edition, surgical technology principle and practice
- Teri L JNUGE, Ben D. Price, surgical technology for the surgical technologist.

PMS-626 RESEARCH PROJECT Credit Hours: 6(0+6)

Objectives:

- The student will learn basic research methodology and gain knowledge about research.
- Students will be able to compile and present their research project report.

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 be submitted to examination for degree requirements fulfillment.

PMS- 627 SEMINAR Credit Hours:1(0+1)

During last year each student should select a topic of research work with consultation of his/her supervisor and shall present his/her research work through a seminar.