KHYBER MEDICAL UNIVERSITY

INSTITUTE OF PARAMEDICAL SCIENCE (IPMS)

1st Version Curriculum of BS Health Technology

Table of content

Contents

Vision & Mission

Khyber Medical University (KMU) Vision:

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

Khyber Medical University (KMU) Mission:

Khyber Medical University aims to promote professional competence through learning and innovation for providing comprehensive quality health care to the nation.

Institute of Para Medical Sciences KMU Peshawar Mission:

Encouraging outstanding allied health practitioners in terms of their abilities, research, kind care, and community service enhances the healthcare system.

Program Introduction

- The BS Health Technology is a rigorous four-year degree program designed to equip students with the expertise required to excel in the dynamic healthcare industry.
- This program integrates fundamental Basic medical sciences, clinical medicine, and surgical subjects to provide a comprehensive education.
- The curriculum begins with essential Basic medical sciences, including anatomy, physiology, biochemistry, microbiology, etc., forming a solid foundation for understanding human health and disease. Progressing into clinical medicine, students acquire in-depth knowledge and practical skills in diagnostics, patient care, and therapeutic interventions through hands-on clinical practicums.
- Combining theoretical instruction with practical training, the BS Health program ensures graduates are well-prepared to meet the challenges of the healthcare industry.
- Graduates will be proficient in the latest health technologies and capable of providing high-quality support in clinical and surgical settings.
- The BS in Health Technology paves the way for diverse career opportunities across various sectors, including hospitals, clinics, research institutions, and healthcare technology firms.
- Furthermore, this degree provides a strong foundation for those seeking to pursue advanced studies and specialization in health sciences, ensuring a broad spectrum of professional growth and development possibilities.

Objective

By the end of this module, the students should be able to:

- Exhibit a comprehensive comprehension of the fundamental medical sciences.
- Apply your understanding of surgical concepts and practices, such as preoperative, intraoperative, and postoperative care, and make efficient use of the newest surgical instruments and sterile procedures.
- To improve clinical and surgical procedures, make use of cutting-edge healthcare technologies.
- Have open lines of communication with patients and healthcare providers.
- Follow professional conduct guidelines and ethical norms to protect patient privacy and safety.
- To stay up to date with the latest developments in medical technology and procedures, make a commitment to continuous learning and flexibility.
- To enhance healthcare services, conduct research and make contributions to technological advances in the field.

Cognitive Domain

1. The cognitive learning domain of BS Health Technology focuses on creating mental skills to enable a Students to acquire knowledge.

2. The learning process assumes a hierarchical structure in the cognitive domain that entails information processing, comprehension, applying knowledge, problem-solving, and undertaking research.

3. Students will get the theoretical underpinnings, analytical skills, and creative thinking required to succeed in the fast-paced industry of health technology.

4. By means of demanding academic programs and hands-on training, they will be equipped to assess intricate medical data, incorporate multidisciplinary expertise, and make knowledgeable choices that improve patient care and healthcare results.

Psychomotor Domain

1. Psychomotor Encourage students to precise for physical movement and the use of motor skills like coordination and posture.

2. This area entails the development of practical technical skills that allow students to perform clinical and surgical operations accurately and proficiently.

3. Students will gain confidence and proficiency in operating sophisticated medical equipment, performing delicate surgical procedures, and providing direct patient care via comprehensive hands-on training and simulation exercises.

4. Mastery of these skills ensures that graduates are well-prepared to meet the high standards of clinical practice and contribute effectively to patient health and safety.

Affective Domain

1. Include the critical attitudes, values, and professional behaviors that students are supposed to develop during the program are included in the emotional domain.

2. This domain focuses on developing students' interpersonal, ethical, and emotional intelligence—all of which are critical for providing patient-centered and compassionate care. Students' empathy, cultural sensitivity, and ethical responsibility will grow through immersive learning experiences and reflective practice.

3. They will get knowledge on how to properly communicate with patients, families, and medical teams. They will also learn how to stand out for patient rights and make a commitment to their professional and lifetime learning.

4. This all-encompassing development guarantees that graduates not only possess superior technical skills but also exhibit the humanistic traits essential to the provision of excellent healthcare.

Framework for BS Health Technology Program

Total number of credit hours	132
Duration	4 years
Semester Duration	6 Months
Semesters	8 Semester
Course load per semester	15-18 credit hours
Number of course per Semester	4 - 6 Subjects

Compulsory Requirements (the student has no choice)		**General Courses to be chosen from other departments**		**Discipline Foundation Courses**		**Discipline Specific Courses**	
08 Course		**10 Course**		**12 Course**		**18 Course**	
Subject	Cr.Hr	Subject	Cr.Hr	Subject	Cr.Hr	Subject	Cr.Hr
1. English-I	2+0	1. Hematology-I	3(2+1)	1. Biochemistry-I	4(3+1)	1. Public Health	2(1+1)
2. English-II	2+0	2. Hematology-II	3(2+1)	2. Biochemistry-II	4(3+1)	2. Cardio - Pulmonary Disease	3(2+1)
3. Pakistan Study	2+0	3. Diagnostic Imaging	2(1+1)	3. Human Physiology-I	4(3+1)	3. Gastrointestinal and Hepatobiliary Disease	3(2+1)
4. Islamic Studies	2+0	4. Critical Care	3(2+1)	4. Human Physiology-II	4(3+1)	4. First Aid	3(2+1)
5.Bioethics	2+0	5.Leadership and Management	2(2+o)	5. Human Anatomy-I	4(3+1)	5. Primary Health Care	3(2+1)
6.Communication Skills	2(1+1)	6. Research Methodology	3(2+1)	6. Human Anatomy-II	4(3+1)	6. Infectious disease	3(2+1)
7. Behavior Science	2+0	7. Biostatistics	3(2+1)	7. Pathology-I	3(2+1)	9. Pre- &-Post-Operative Care	3(2+1)
8. Computer Skills	2(1+1)	8. Fundamental of Infection Control	2(1+1)	8. Pathology-II	3(2+1)	10. Basics of Neurology	3(2+1)
		12. Burn & Toxicology	3(2+1)	9. Medical Microbiology-I	3(2+1)	11. Nutritional & Endocrine Disorders	3(2+1
		13.Epidemiology	3(2+1)	10. Medical Microbiology-II	3(2+1)	11. Disease of Ear ,Nose and throat	3(2+1)
				11. Pharmacology-I	3(2+1)	12. MCH & EPI	3(2+1)
				12. Pharmacology-II	3(2+1)	13. Community Dermatology	3(2+1)
						14. Health Education	2(2+0)
						15. Basic Surgical Skills	3(2+1)
	16		27		42		40

Scheme of Study

Semester	Course code	Course Title	Credit Hrs.
1st	PMS- 601	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	Pakistan Study	2(2+0)
	PMS- 606	Computer Skills	2(1+1)
		Total Credit hours	18
2nd	PMS- 607	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)
		Total Credit hours	16
3rd	PMS- 612	Pathology-I	3(2+1)
	PMS- 613	Medical Microbiology-I	3(2+1)
	PMS- 614	Pharmacology-I	3(2+1)
	PMS- 615	Communication Skills	2(1+1)
	MLT- 601	Hematology-I	3(2+1)
	BHS- 601	Public Health	2(1+1)
		Total Credit hours	16
4th	PMS- 616	Pharmacology-II	3(2+1)
	PMS- 617	Pathology-II	3(2+1)
	PMS- 226	Hematology-II (Non - MLT)	3(2+1)
	PMS- 618	Medical Microbiology-II	3(2+1)

	RAD- 610	Diagnostic Imaging	2(1+1)
	PMS- 619	Behavioral Sciences	2(2+0)
		Total Credit hours	16
5th	BHS- 602	Cardio - Pulmonary Disease	3(2+1)
	BHS- 603	Gastrointestinal and Hepatobiliary Disease	3(2+1)
	BHS- 604	First Aid	3(2+1)
	ANS-609	Critical care	3(2+1)
	ANS-610	Leadership and Management	2(2+o)
	ECT-605	Burns & Toxicology	3(2+1)
		Total Credit hours	17
6th	BHS - 605	Basic Surgical Skills	3(2+1)
	BHS – 606	Primary Health Care	3(2+1)
	BHS – 607	Infectious disease	3(2+1)
	BHS –608	Pre- &-Post-Operative Care	3(2+1)
	BHS – 609	Basics of Neurology	3(2+1)
	BHS - 610	Nutritional & Endocrine Disorders	3(2+1)
		Total Credit hours	18
7th	BHS- 611	Disease of Ear ,Nose and throat	3(2+1)
	BHS- 612	MCH & EPI	3(2+1)
	PMS- 621	Research Methodology	3(2+1)
	PMS- 622	Biostatistics	3(2+1)
	PMS- 623	Epidemiology	3(2+1)
	PMS- 624	Fundamental of Infection Control	2(1+1)
		Total Credit hours	17
8th	BHS – 613	Community Dermatology	3(2+1)
	BHS – 614	Health Education	2(2+0)
	PMS- 626	Research Project	6(0+6)
	PMS –625	Bioethics	2(2+0)
	PMS-627	Seminar	1(0+1)

			14
Total Credit hours			**132**
HEC Recommendation = 124-146			

1st SEMESTER COURSES

1. Biochemistry -I
2. Human Physiology-I
3. Human Anatomy-I
4. English-I
5. Pak Studies
6. Computer skills

PMS- 601 Biochemistry-I Credit Hours 4(3+1)

Course Objectives:

- To understand the chemical composition, biochemical role, digestion and absorption of macro and micro molecules of the cell.
- To understand different biochemical reactions in cell.
- To understand mechanism of action of hormones.

Course contents:

Acids, bases, PH and buffers, Biochemical composition & functions of the cell membrane, Transport across the cell membrane, Carbohydrates, Introduction, structure, function, digestion & absorption of 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.

Practical's:

- Blood sample collection for biochemical analysis
- Preparation and calculation of Solutions
- Principles of Biochemistry analyzers (spectrophotometer, flame photometer)
- 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 2009
- 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:

- To understand the basic concepts of physiology beginning from the cell organization to organ system function.
- To understand the organization of cell, tissue organ and system with respect to their functions.
- To 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 this Skin, Types &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 &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, Pregnancy and parturition, Mammary Glands &Lactation, Fertility Control.

Practical's:

- 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 inHealth And Illness 11thEdition Anne Waugh, Allison Grant 2010

PMS-603 Human Anatomy-I Credit Hours:4(3+1)

Course Objectives:

- To understand the basic concepts of anatomy beginning from the cell organization to organ system function.
- To understand the basic concepts of general anatomy including skeleton and musculo -skeleton.
- To Understand 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 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 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.

Practicals:

- Study Axial and Appendicular skeleton on human skeletal model.
- Study musculoskeletal system on human musculoskeletal model.
- Study organs of special senses.
- Study and understand anatomy of Thorax, Abdomen and Pelvisthrough:
- HumanModels, 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.

- BD Chaurasia for general anatomy

Reference books:

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

PMS -604 English–I Credit Hours: 2(2+0)

Course Objective:

- To enable the students to meet their real life communicationneeds
- To enhance language skills and develop critical thinking

Course Contents:

Vocabulary Building Skills: Antonyms, Synonyms, Homonyms, One word Substitute, Prefixes and suffixes, Idioms and phrasal verbs, Logical connectors, Checks 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:

- PracticalEnglish Grammar by A.J. Thomson and A.V. Martinet. Exercises
- 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:

- To develop vision of HistoricalPerspective, Government, Politics, Contemporary Pakistan, ideological background of Pakistan.
- To study theprocess ofgovernance, 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, 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 on ward 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 inPakistan, Vol. I, II& III. Islamabad: National Institute of Historical and culturalResearch, 1998.

PMS-606 COMPUTERSKILLS Credit Hours:2(1+1)

Course Objectives:

- To understand the basic of computer
- To utilize the MS office,internet andemail

Course Contents:

Introduction to Computer &Window XP/7; MS Office 2007 (Word,Excel, PowerPoint); Internet access &different data bases available on the internet; Email.

Recommended Books:

- Computer science by Muhammad Ashraf, edition 1st 2010.

2nd SEMESTER COURSES

1. Biochemistry -II
2. Human Physiology-II
3. Human Anatomy-II
4. English-II
5. Islamic Studies

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

Course objective:

- Discuss the basic concept of biomolecules and its metabolism inhuman body
- Describe the significance of various enzymes andhormones in human body
- Demonstrate various enzymes and hormones on biochemistry analyzer and interpretit result for the diagnosis and monitoring

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

Books:

- Biochemistry by Dr. U.Satyanarayana,U Chakrapani
- Marks' Essentials of 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.

PMS -608 Human Physiology-II Credit Hours :(3+1)

Course Objectives:

- To understand the basic concepts of physiology beginning from the organization of the systems to their role in the body.
- Understand the organization and function of various systems
- Understand the physiology of Blood, CVS, Nervous System and special senses
- Students will be able to understand immunity, its types and immune reactions

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 System, 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

- Spirometry
- 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 inHealth And Illness 11thEdition Anne Waugh, Allison Grant 2010
- ConcisePhysiology by Raja ShehzadGull20061thedition

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

Course Objectives:

- To understand the basic concepts of anatomy beginning from the cell organization to organ system function
- To understand the anatomy of upper limb, lower limb and head and neck.
- To understand the knowledge about endocrine system

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, Classificationofendocrineglands,Pituitaryglands,ThyroidGlands,Adrenalglandanddifferences between the cortex and medulla.

Practicals:

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

- HumanModels
- Video demonstration
- 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 humananatomy 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+0)

Course Objectives:

- 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:

- PracticalEnglish Grammar by A.J. Thomson and A.V. Martinet. Exercises 2. Third edition.
- Oxford University Press 1986. ISBN 0 19 431350 6.
- PracticalEnglish Grammar by A.J. Thomson and A.V. Martinet. Exercises 1. Third edition.
- Oxford University Press. 1997. ISBN 0194313492.
- Intermediate by Marie-Christine Boutin, Suzanne Brinand and Francoise Grellet.
- Reading. Upper Intermediate. BrainTomlinson and Rod Ellis.
- Oxford Supplementary Skills. Third Impression1992. ISBN 0 19 453402 2.

PMS-611 Islamic Studies Credit Hours:(2+0)

Course Objectives:

- To learn about Islam and its application in day to day life.
- To provide Basic information about Islamic Studies
- To enhance understanding of the students regarding Islamic Civilization
- To improve Students skill to perform prayers and other worships
- To enhance the skill of the students for understanding of issues related to faith and religious life.

Coursecontents:

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, Kind hearted, Beneficence, Self Confidence, Observing Promise, Equality, Relation among the Doctors, Jealousy, Backbiting, Envy, Etiquettes of Gathering, Relation between a Doctor and 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 COURSES

1. Pathology -I
2. Medical Microbiology-I
3. Pharmacology-I
4. Communication Skills
5. Hematology-I
6. Public Health

PMS- 612 General Pathology-I CreditHours:3(2+1)

Course Objectives:

- To understand different pathological processes
- To the processes blood coagulation and embolism
- To understand the mechanism of wound healing and regeneration

CourseContents:

Introduction to pathology, Cell injury, Cellular adaptation, Acute Inflammation, Chronic Inflammation, Cell Repair&Wound Healing, Regeneration & Repair, Haemodynamic Disorders, Edema, Haemorrhage, Thrombosis, Embolism, Infarction&Hyperaemia, Shock, compensatory mechanism of shock, possible consequences of thrombosis &difference between arterial and 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 TromboplastinTime

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-613 MEDICAL MICROBIOLOGY-I (Non-MLT) Credit Hours: 3(2+1)

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 &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

PMS-614 Pharmacology-I Credit Hours: 3(2+1)

Course Objectives:

- To define common terms related to pharmacology and drug therapy.
- To discuss relevant historical, legal, and ethical issues related to pharmacology and drug therapy.

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's:

- Routes of drug administration Practical:
- Introduction to drug dosage form 2. Study of the action of drugs (Atropine) on the rabbit's eye.
- Dose-Response Curves
- Effect of adrenaline on pulse rate
- Effect of beta blockers on heart rateafter 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
- Prescriptionwriting

Recommended Books

- Lippincott's pharmacology (text book) by Mycek2ndEdition published by Lippincott Raven 2000.
- Katzung textbook of pharmacology (Reference Book) by Bertram Katzung8th Edition, Published by Appleton.dec 2007.

MLT-601 Hematology-I Credit hours 3(2+1)

Course Objectives:

By the end of this semester the students of BS technology 3rdsemesterwill be ableto:

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

CourseContent:

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, 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 and its classification, Introduction to hemolysis(physiological and pathological), Introduction to WBC disorders, introduction to leukemia, etiology, pathogenesis and its classification, Leukocytosis, leukopenia, Neutrophilia, condition relatedto neutrophilia, Eosinophilia, condition related to eosinophilia, Monocytosis, condition related to monocytosis, Lymphocytosis, condition related tolymphocytosis, Introduction tohemostasis, 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's count
- Determination of absolute values
- Differential leucocytecount; platelets count and reticulocytes count
- To determine the ESR.
- 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.CDegrunchi, 5th edition 2002
- Practical Hematology, Dacie J.V. 10th edition 2012

PMS-615 Communication Skills Credit Hours :2(1+1)

Course Objectives

By the end of the 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 theiracademic 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, of 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, group ware, 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:

- Interpersonal communication paper back by kory Floyd
- Reading into writingI English for academic, purposesA Hand bookfor college freshman English (mass market paperback) by conception D. Dadufaiza
- Lectures' and presentation

BHS-601 Public Health credit hours2(1+1)

Course Objective:

- To introduce to the students the significance of the discipline of public health in medical and applied social sciences regarding its history applications and development.

Course Contents:

Basic definition, primary health care, nutrition, water supply, sanitation, mother and child health (MCH), family planning, immunization, mental health, drug abuse, health education, health management information system, health system research.

Practicals:

- Immunization technique
- Health survey
- Mother hygiene during menstruation
- Family planning Education technique
- Drug addiction counseling

Recommended Books:

- Ilyas Ansari's community medicine (Text Book) by Ilyas and Ansari 2003 published by Medical division Urdu Bazzar Karachi
- K Park's community medicine (Reference Book) by K Park 2003 Published by Banarside Bhanot Jaipur India.

4th SEMESTER COURSE

1. Pharmacology-II
2. Pathology-II
3. Hematology-II
4. Medical Microbiology-II
5. Diagnostic Imaging
6. Behavior Science

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

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.

Course contents:

Drugs acting on cardiovascular system; Drugs for heart failure, anti-hypertensive drugs, anti-anginaldrugs,Anti-Hyperlipidemicdrugs,Blooddrugs(Anticoagulants),Diuretics, Chemotherapeuticsdrugs([Anti-protozol,Anti-Malarial],Anti-Fungal,Anthelmintic), Antibiotics(Penicillin's,cephalosporin's,macrolides,aminoglycosides,fluroquinolones),Drugs acting on Respiratory system(Asthma).

Practical:

- Routes of drug administration
- Dose-Response Curves
- Affect of adrenaline on pulse rate
- Affect of beta blockers onheart rate afterexercise
- Source of drug and identification of some raw materials thatare source of drug
- Weight conversionsand measurements
- Preparation Sulfur ointment
- Preparation of pilocarpine drops
- Prescription writing

Recommended Books:

- Lippincott's pharmacology (text book) by Mycek2ndEdition published by Lippincott Raven 2000.
- Katzung textbook of pharmacology (Reference Book) by Bertram Katzung8th Edition, Published by Appleton.dec 2007.

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:

Health effects of climate change, toxicity of chemical and physicala gents, environmental pollution, effectoftobacco, 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, bronchiactasis, pneumonias, pneumothorax ,hemothorax, nephrotic syndrome, renal stone, hydronephrosis, aphthousulcer, gastritis, pepticulcer, hemorrhoid, jaundice, liver cirrhosis, viral hepatitis, cholecystitis, urinary tract infections, arthritis, facial palsy.

Practicals:

- 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

PMS- 618 Medical Microbiology-II Credit Hours: 3(2+1)

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:

Biosafety levels, control of hospital infection, biomedical waste management, 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.

Practicals:

1. Cleaning of new and used glass wares for microbiological purposes.
2. Students should be familiar to use autoclave, hot air oven, water bath, steamer etc.
3. Macroscopic and microscopic examination of stool for adult worms, ova, cysts, larvae.
4. Visit to hospital for demonstration of biomedical waste management.
5. Demonstration of common serological tests used for the diagnosis of viral and parasitic infection.
6. Demonstration of malarial parasites in blood and bone marrow.
7. Demonstration of leishmania in blood film. 8. 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—226 Hematology II (Non-MLT) Credit Hours: 3(2+1)

Course Objectives:

- To introduce the students about the basic concepts in Hematology and acquire skill in practical work to produce a team of Medical Technologists steeped in knowledge of Pathology.
- To equip Medical Technologists with latest advancements in the field of hematology.

Course Outlines:

Iron metabolism, introduction to iron deficiency anemia, different stages and diagnosis, introduction to thalassemia, classification, pathophysiology and its diagnosis, introduction to Sidroblastic anemia, etiology and diagnosis, folat and vitamin B12 metabolism, introduction to megaloblastic anemia, etiology and diagnosis, introduction to G6PD deficiency anemia, pathophysiology and diagnosis, introduction to sickle cell anemia, pathophysiology and diagnosis, introduction to hereditary spherocytosis, pathophysiology and diagnosis, introduction to hemolytic anemia, Immune hemolytic anemia, non immune hemolytic anemia, aplastic anemia, etiology and diagnosis. ABO and Rh D group system, kell blood group system, ked blood group system, duffy blood group system, donor selection criteria, phlebotomy of donor, blood products, preparation, storage and its importance, hem vigilance in blood bank, cross match, types of cross match, procedure and its importance, blood grouping and its importance, coomb,s test, types and importance , introduction to hemolytic disease of newborn, types, pathophysiology, diagnosis and management, hemolytic transfusion reactions and management.

Practicals:

1. ABO blood grouping (Forward and Reverse grouping)
2. Rh Blood grouping
3. Antibodies screening
4. Cross matching (Major and Minor)
5. Coombs tests (Direct and Indirect)
6. Separation of different blood components
7. Du Test

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-619 Behavioral Sciences Credit Hours: 2(2+0)

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

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

Course objectives:

- To equip the student with professional knowledge, skill, techniques &ethical values to enable themto 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:

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

5th SEMESTER COURSE

1. Cardio-Pulmonary disease
2. Gastrointestinal and Hepatobiliary Disease
3. First Aid
4. Critical care
5. Leadership and Management
6. Burns & Toxicology

BHS-602 Cardio-Pulmonary Disease Credit Hours 3(2+1)

Course objectives:

This course has been designed to equip the students with professional knowledge, skills, techniques, and ethical values to enable them to apply their acquired expertise in primary health care units and also in hospital wards, assess cardiac disease and respiratory disease, and also understand a complete history and general physical examination.

Course contents:

Complete history taking, General Physical Examination, Systemic Hypertension, Coronary Artery disease, Angina Pectoris and MI, Heart Failure, Acute Myocardritis, pericardritis & Infective Endocardritis, Different Cardiac Arrhythmia, Upper respiratory tract Infections, Obstructive Lung Disease-Asthma, Chronic Obstructive Pulmonary Disease, Pulmonary Tuberculosis, Pulmonary Embolism, Pneumonia, Management of Hemothorax & Pneumothorax.

Practical:

- Identification of various structures through models and charts
- Operation of Cardiac Monitring
- Clinical Examination
- Phlebotomy, Iv Canula
- BP recording

Recommended books:

1. Kumar and Clark's Clinical Medicine 10th edition
2. Davidson's Principals and practice of medicine 22nd edition
3. Mohammad Inam Danish-Short Textbook Of Medica Diagnosis And Treatment
4. Bates' Guide to Physical Examination and History Taking by Lynn Bickley
5. Rosen's Emergency Medicine Concepts and Clinical Practice 9th

BHS-603 Gastrointestinal and Hepatobiliary Disease Credit Hours 3(2+1)

Course objectives:

This course has been designed to equip the students with professional knowledge, skills, techniques, and ethical values to enable them to apply their acquired expertise in primary health care units and also in hospital wards, to assess gastrointestinal disease, liver disease, and bladder disease, and to also understand the functional anatomy of the GIT and liver.

Course contents:

Functinal Anatomy, Physiology of the Gastrointestinal Tract, and Investigation of GIT Disease, Presenting problems in gastrointestinal disease, Aphthous Ulceration, Gastro-oesophageal reflux disease (GERD), Upper & Lower GI bleed, Gastritis, Peptic ulcer disease, Malabsorption, Jaundice, Acute liver failure, Acute Appendicitis, Acute Pancreatitis, Hemorrhoids, Non-Alcohlic Fatty Liver Disease, Viral Hepatitis B & C, Cholecystitis.

Skills Domains:

- Assessment and monitoring of the patients Gasterointestinal disease
- Differentiate different liver and bilary tract disease
- Understand basic physiology and anatomy of GIT and Liver

Recommended books:

1. Kumar and Clark's Clinical Medicine 10th edition
2. Davidson's Principals and practice of medicine 22nd edition
3. Mohammad Inam Danish-Short Textbook Of Medica Diagnosis And Treatment
4. Clinical Emergency Medicine
5. Rosen's Emergency Medicine Concepts and Clinical Practice 9th

BHS-604 First Aid Credit Hours 3(2+1)

Course objectives:

This course has been designed to Understand the fundamental concepts of First Aid, including its importance and the scenarios where it is applicable. Develop the ability to quickly assess emergencies and determine the appropriate First Aid measures. Learn and practice essential First Aid techniques, such as CPR, wound care, and stabilization of injuries and certain medical emergencies.

Course contents:

Introduction to First Aid, Primary and Secondary Survey, Basic Life Support (BLS), Dressings, Pads and Bandages, First Aid for Fractures and Wounds, Choking, Heat Stroke and Frostbite, Anaphylactic Reaction, Seizures and Stroke, Roadside Accidents and Patient Transportation, Fever and Abdominal Pain, Near Drowning, Diarrhea and Vomiting, Sports Injuries and Epistaxis, first aid of Hypoglycemia and Hypotension, Bites and Sting, Altered Mental status and Coma.

Skills Domains:

- Demonstrate proficiency in performing CPR and other life-saving techniques.
- Apply correct procedures for cleaning, dressing, and bandaging wounds.
- Effectively immobilize fractures and other injuries to prevent further harm.
- Properly utilize tools and First Aid instruments and equipment

Recommended books:

1. Basic life support by AHA 2020 Guidline
2. The Complete First Aid Pocket Guide (PDFDrive)
3. ABC's of Emergency Medicine
4. Compendium of First Aid by Dr M. Shahzad

ANS-609 Critical care Credit Hours 3(2+1)

Course objectives:

Students are expected to understand various critical cardiovascular situations, categorize the patient access critically ill patient, and know about pharmacological intervention-mechanical procedure n necessary to stabilize the pumping system of the human body.

Course contents:

An introduction to criticalcare,Shock,Resuscitation in intensive care an operation theater, Cardiovascular monitoring in critical care, Cardiovascular investigation of the critically Ill, Hematological Aspects of cardiovascular critical care, Cardiovascular support Pharmacological,Arrhythmias,Mechanical heart failure therapy, Care of the high risk patient undergoing surgery ,Common complications of cardiovascular critical illness, Acute coronary syndrome sand myocardial infarction, Cardiogenic shock, Aortic dissection, Emergency management of cardiac trauma, Hypertensive crises, Endocrine problems and cardiovascular critical care, fluid and electrolytes, acid and base balance.

Practicals:

1. Assessment of shock and its types
2. Assessment of arrhythmias
3. Management of shock
4. Management of arrhythmias
5. Management of Cardiac arrest
6. Management of acute Myocardial infarction
7. Management of Hypertensive crisis
8. Analysis of arterial blood gases
9. Management of Cardiac trauma and aortic dissection

Recommended books:

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

ANS-610 Leadership and Management Credit Hours 2(2+0)

Course objectives:

Students are expected to understand various leadership models, styles of leadership, to gain the expertise to maximize result with minimum effort, to utilize the resources in skill full manner and ensure human betterment and justice.

Course contents:

Introduction of leadership,theories,process model, skill of leadership, principles of leadership, emotional intelligence,professionalism.introduction of management, scope policy making, procedure and method of planning, limitation of planning, importance of organization, line relationship, staff relation, function alrelation,committee organization, motivation and their theories, motivational technique,commutation,Controlling,spanofcontrol,factorlimiting effective control, super management, general manager, middle manager,supervisor,planning and controlling relationship, management control process.budget,principles and technique of co-ordination, personal management, staffing and work distribution technique, recruitment and selection process, complaints and grievances, termination of employee, health and safety of employee, financial management, profit maximation,return maximation,short,middle,long term financing

Recommended books:

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

ECT-605 Burn and Toxicology Credit Hours 3(2+1)

Course objectives:

Student will be able to analyze the burn surface area depth & assess the situation, obtain a basic history and do physical examination, manage burn care, and, if needed, extricate the patient.

To Confidently handle crisis situations and safely and accurately perform all basic and advanced life support procedures.

Course contents:

Burns

Introduction and epidemiology, Pathophysiology of Burn, Classification & Burn types, Immediate Care of Burn patients (pre and in Hospital), Assessment of burn wound, Fluid resuscitation in burns patients, Surgical and Pharmacological treatment of burns, Dressing of burns wound, Energy balance and nutrition of the burn patients, additional aspect of treating burn patient, Non-thermal burn injury (electrical, chemical, cold & ionizing radiation injuries)

Toxicology

basic definitions of toxicology, poison and poisoning, Route of Exposure, Toxidrome, General approach and Principals of decontamination, drug overdose and antidotes, Management of Anticonvulsant and antipsychotic drugs poisoning, Aspirin toxicity, Benzodiazepine poisoning, Beta blockers and calcium channel blockers toxicity, Cyanides and Organophosphate toxicity, NSAIDs and Alcohol toxicity, recreational drugs toxicity, management of snake & scorpion bite

Practical's:

1. Application of rule of nine for estimation of total burn surface area.
2. Fluid input & output Recording & measurement.
3. ECG taking and monitoring
4. Blood Pressure Recording
5. Peripheral Venous Access
6. Central Venous Access
7. Intraosseous Access
8. External cardiac resuscitation
9. Monitoring Arterial Pulse Oximetry
10. Urinary & Gastric Catheterization
11. Usage of internal & external feeding pumps.

Recommended books:

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

6th SEMESTER COURSE

1. Basic Surgical Skills
2. Primary health care
3. Infectious Disease
4. Pre & Post-Operative Care
5. Basic of Neurology
6. Nutritional & Endocrine Disorder

BHS-605 Basic Surgical Skills Credit Hours 3(2+1)

Course objectives:

At the end of this course the student will be to know

- Principle of skin incision wound closure and drain usage
- Principle of diathermy, ligature and harmonic scalpel machine.
- Understand basics aseptic technique and principle

Course contents:

Skin incision, wound closure, suture material, needle and drain, different types of drain, diathermy machine, principle of diathermy, effect and complication of diathermy, ligature, principle of ligature, aseptic technique, guidelines and principle of aseptic technique, opening different sterile supplies, basic concept of sterilization and disinfection, types of sterilization and disinfection, uses of suction machine, uses of different catheter, tubes and splints.

Practical's:

- To identify different skin incision
- Apply how to used different drain and tubes
- Assessment and apply diathermy principle
- Exercise to know about operating room attire and scrubbing technique

Recommended books:

1. Colleen J Rutherford,RN,CNOREducator.Differetiating Surgical Equipment and supplies
2. Nancy Marie Phillips, 11thedition.Berry Kohn's Operating Room Technique.
3. 25th Edition volume 1.Bailey and love's Short practice of surgery

BHS-606 Primary Health care Credit Hours 3(2+1)

Course objectives:

Upon completing this course, students will:

- Understand the principles and components of Primary Health Care.
- Learn the role of PHC in strengthening health systems.
- Develop skills to address community health challenges.
- Understand the integration of health technology into PHC.
- Explore case studies and programs implementing PHC globally

Course contents:

Introduction to Primary Health Care, Principles of PHC, Organization of PHC services, Health Education in PHC, National & International health care system, National Programs in Pakistan, Integration of Behavioral & PHC care, Health promotion and preventive approach, community based approach of PHC, Monitring and evaluation of PHCS programs, Challenges of PHC, Innovation and future of PHC, Global PHC case studies, National and international health system,the economy of PHC and improving the health of world poor people.

Practical's:

- Knowing basic model of Health care system
- Visit a primary health care center to observe service delivery.
- Develop a community health intervention plan targeting a specific health issue

Recommended books:

1. Primary Health Care: Theory and Practice" by Trisha Greenhalgh.
2. WHO Reports on PHC and Universal Health Coverage
3. Excel Community Medicine 5th Edition by Dr M.Naveed Alam

BHS-607 Infectious disease Credit Hours 3(2+1)

Course objectives:

Upon completing this course, students will learn about the general and Systemic infectious disease cause by microorganism like virus bacteria and parasite and also learn its management and prevention as well.

Course contents:

Approach to the patient with a suspected infection, Sepsis, Fever and Pyrexia of Unknown Origin, Whooping Cough, Diphtheria, Cholera, Typhoid fever, Tetanus, Amebic dysentery, Malaria, Measles Mump Rubella, Dengue, Rabies, Gonorrhea, Syphilis, Roundworm (Ascariasis), scabies.

Practical's:

- Assessment of systemic infection
- Assessment of fever and whooping cough
- Management of fever
- Management of Git infection
- Management of tetanus
- Prevention and management of MMR
- Management of UTI and bone inflammation

Recommended books:

1. Kumar and Clark's Clinical Medicine 10th edition
2. Davidson's Principals and practice of medicine 22nd edition
3. Mohammad Inam Danish-Short Textbook Of Medica Diagnosis And Treatment
4. Clinical Emergency Medicine
5. Rosen's Emergency Medicine Concepts and Clinical Practice 9th

BHS-608 Pre & Post-Operative care Credit Hours 3(2+1)

Course objectives:

Upon completing this course, students will learn about the

- To care of the patient before surgical intervention in wards and post-After completion of this course the student will be able to:
- Concept regarding pre and post-Operative care.

Course contents:

Pre-operative care

Pre-operative counseling and informed consent, Infection prevention and preparation (Skin preparation, fasting guidelines, and prophylactic antibiotics) Definition of intra-operative care, Goals and importance in surgical outcomes, Proper positioning techniques (Prevention of positioning-related injuries, And the use of supports and straps)

Post-Operative Care:

Definition and scope of post-operative care, Nutrition and mobility after surgery, Early recognition, Prevention, and Management of complications (Hypovolemia, hemorrhage, shock, postoperative fever and infections, Acute pain, and nausea/vomiting), Managing surgical drains (Monitoring and timely removal)

Practical's:

1. Introduction, history taking
2. Physical examination.
3. Investigations
4. Fluid management/blood availability
5. Patient counseling
6. Handling Tubes

Recommended books:

1. Comuswhalan.Assisting at surgical operations,practical guide.
2. Nancy Marie Phillips, 11thedition.Berry Kohn's Operating Room Technique.

3. Colleen J Rutherford,RN,CNOREducator.Differetiating Surgical Equipment and supplies
4. Maxine A.GoldMan, Room,3rd Edition. Pocket guide to the Operating Room.

BHS-609 Basics of Neurology Credit Hours 3(2+1)

Course objectives:

Upon completing this course, students will learn about the basic structure and function of nervous system, neurological examination and different neurological disorder.

Course contents:

Basic Structure and Function of Nervous system, Neurological examination such as (mytomes, dermatomes, spinal nerve distribution, reflexes, AVPU scale) Headache, its types & facial pain, trigeminal neuralgia, ischemic stroke & TIA, hemorrhagic stroke, epidural hematoma, subdural haematoma, CNS & spinal infections (viral, bacterial and fungal meningitis, encephalitis, brain abscess) ,tetanus, brain death assessment, botulism, GBS, sciatic pain, cerebral edema, spinal cord compression, spinal cord syndromes, GCS assessment, seizure and epilepsy.

Practical's:

- Measurement of Glasgow coma scale
- Assessment of brain death
- Usage of glucometer
- Monitoring Arterial Pulse Oximetry
- Urinary & Gastric Catheterization
- Usage of Enteral feeding pumps
- Usage of Blood gas and electrolyte analyzer
- Resuscitation & airway teaching learning simulators

Recommended books:

1. Kumar and Clark's Clinical Medicine 10th edition
2. Davidson's Principals and practice of medicine 22nd edition
3. Mohammad Inam Danish-Short Textbook Of Medica Diagnosis And Treatment
4. Clinical Emergency Medicine
5. Rosen's emergency medicine; concepts & clinical practice John.A Marx.2005
6. Oxford book of emergency medicine

BHS-610 Nutritional & Endocrine Disorder Credit Hours 3(2+1)

Course objectives:

Upon completing this course, students having elaborative knowledge about nutritional deficiency disorders and its management along with this stud will also learn different endocrine disorder and its management as well.

Course contents:

Functional anatomy and physiology, Dietary Requirements, Protein-Energy Malnutrition, Vitamins deficiency disease, Minerals Deficiency Diseases, Introduction to Endocrinology, history and clinical examination, Diabetes Militias, Diabetes Insipidus, DKA, Thyrotoxicosis, Hypothyroidism & Hyperthyroidism, Presenting problems in reproductive disease, Amenorrhea, Male infertility, Hypercalcemia, Hypocalcaemia, Cushing's syndrome, Adrenal insufficiency, pituitary disease, Obesity, Under-nutrition/Malnourishment and Diseases of vitamins.

Practical's:

1. Blood UCR
2. TSH T3,T4
3. Glucose tolerance test
4. FBS AND RBS

Recommended books:

1. Kumar and Clark's Clinical Medicine 10th edition
2. Davidson's Principals and practice of medicine 22nd edition
3. Mohammad Inam Danish-Short Textbook Of Medica Diagnosis And Treatment
4. Clinical Emergency Medicine
5. Oxford book of emergency medicine

7th SEMESTER COURSE

1. Disease of Ear, Nose and throat
2. MCH & EPI
3. Research Methodology
4. Biostatistics
5. Epidemiology
6. Fundamental of Infection Control

BHS-611 Disease of Ear, Nose and Throat Credit Hours 3(2+1)

Course objectives:

Upon completing this course, students having elaborative knowledge about Disease of the Ear, Disease of the Nose and Disease of the throat and also would be able to manage pharmacologically and non-pharmacological.

Course contents:

Anatomy and physiology of Ear, the discharging ear (otorrhoea), Cholesteatoma and Hearing loss, Otitis media, Benign paroxysmal positional vertigo (BPPV), Tinnitus, perforated tympanic membrane, Anatomy and physiology of Nose, Epistaxis, Rhinitis, Nasal obstruction, Sinusitis, fractured nose, Fractured nose of Throat, Hoarseness (dysphonia) and Nodules, Strider and snoring.

Practical's:

- Assesment of ear
- Assessment of hearing loss
- Management common ear disorder
- Management common nose disease
- Assesment and management of throat disease

Recommended books:

1. Diseases of Ear, Nose and Throat & Head and Neck Surgery by PL Dhingra Seventh Edition
2. Kumar and Clark's Clinical Medicine 10th edition
3. Davidson's Principals and practice of medicine 22nd edition
4. Mohammad Inam Danish-Short Textbook of Medica Diagnosis and Treatment
5. Clinical Emergency Medicine

BHS-612 MCH & EPI Credit Hours 3(2+1)

Course objectives:

To introduce to the student, the significance of mother and child disorders and six target diseases, preventive, curative care and patient receiving, taking history, assessment, investigation in OPD, maintain the patient and ward record in gynae ward labor room, antenatal room and EPI unit.

Course contents:

M.C.H.

Maternal & Child health, Antenatal Care Nutrition, patient assessment, provisional diagnosis, treatment plan in OPD, patient receiving, admission, history taking, assessment, investigations, output input chart, temperature chart, special investigation chart, provisional, differential diagnosis, patient and ward record. Preparation for surgery, pre and post-operative care and preparation the patient for discharge, Patient assessment in labor room and gynae OT, E.D.D.C, Diarrhea and Dehydration, Dysentery, Hyperpyrexia,

E.P.I

Six Target Disease Their Vaccination Schedule, Routes of administration, Doses of Vaccine, E.P.I Cold Chain Definition, maintenance, Clinical Significance.

Recommended books:

1. Conveat clinical management of obstetrics and gynecology disease 9th edition Rashid A. Latif Gynecology.
2. Essential of pediatric by prveez Akbar
3. Arshad Chauhan
4. Maternity nursing 7th Edition

PMS-621 Research Methodology Credit hours: 3(2+1)

Course Objectives:

- After studying this course the students will be able to:
- Write various types of research
- Planning of research
- Choose appropriate sampling methodology
- Design a comprehensive questionnaire
- Develop proposal for the research project
- Describe and use Literature review
- Recognize various variables
- Write a research report/Thesis

Course Contents:

Introduction to research (in simple term and a scientific term), concept to f research, why do need research, advantage and scope of research, identification of research needs and its qualities, Types of research; Qualitative, Quantitative and their sub-types, 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, its 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
- SPSS, Endnote e.t.c.

Recommended Books:

- ResearchMethodology by Ranjit Kumar3rdEdition
- Foundation of Clinical ResearchbyPortneyLGWalkaisMP in 1993, Publisher by Appleton and lauge USA
- AguidetoResearchMethodology, Biostatistics and Medical writing by college of physicians and surgeons Pakistan by WHO collaboration center.
- Health system research project by CorlienM Varkerisser, IndraPathmanathan, Ann Brownleein 1993 by InternationalDevelopmentResearchCenter in New Dehli, Singapore.

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

Course objectives:

- After studying this coursethe studentswill be ableto:
- Describe basic terms used in Biostatistics
- Use variousstatistical test dependingupon data
- Select sample and sampling technique
- Categorize various variables
- Illustrate various types of hypothesis
- Estimate various variablesand their significance
- Assemble and analysis ofdata

Course Contents:

Introduction to Biostatistics and its types; Descriptive and inferential statistics, Measure of central tendency, Measures 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 quide to research methodology, biostatistics and medicalwriting by college of physicians and surgeons Pakistan by WHO collaboration center

- Reading understanding multivanant statistics giimm LG Yard ADPR, publisher American Psychological association
- Ilyas Ansari's community medicine (Text Book) by Ilyas and Ansari 2003published by Medical division UrduBazzar Karachi.

PMS- 623 Epidemiology Credit Hours: 2(2+0)

Course objectives:

- To introduce to the students the know-how of the subject of epidemiology in order to apply the knowledge of the subject regarding the community and community relate disease.

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:

1. Public Health by Ilyas Ansari
2. Public Health by J Park
3. Calculation of Sensitivity and specificity
4. Calculation of Incidence and prevalence
5. Finding risk of disease, rate and frequency
6. SWOT analysis
7. Epidemiology by Leon Gordis 5th Edition

PMS- 624 Fundamental of infection control Credit Hours: 3(2+1)

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's:

- 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:

1. Fundamentals of Infection Prevention and Control: Theory and Practice. Weston, D., Wiley-Blackwell, 2013.
2. Sherris Medical Microbiology: An Introduction to Infectious Diseases. Ryan, K. J., Ray, C. G., 4th ed. McGraw-Hill, 2003.
3. District Laboratory Practice in Tropical Countries, Part1 & Part 2. Cheesbrough, M., 2nd ed. Cambridge University Press, 2006.
4. Medical Microbiology and Infection at a Glance. Gillespie, S., H., Bamford, K., B., 4th ed. WileyBlackwell, 2012.

8th SEMESTER COURSE

1. Community Dermatology
2. Health Education
3. Research Project
4. Bioethics
5. Seminar

BHS- 613 Community Dermatology Credit Hours: 3(2+1)

Course objectives:

- To introduce to the student, the significance of skin diseases, preventive, curative care and patient receiving, taking history, assessment, investigation in OPD, maintain the patient and ward record in medical ward and OPD

Course Contents:

Presenting problems in skin disease: Lumps, rashes, eruptions, blisters, Itch (pruritus), Photosensitivity, Leg ulcers, Abnormal skin colour, Hair and nail abnormalities, Acute skin failure, Topical treatment of skin disease, Phototherapy and photo chemotherapy, Systemic therapies, Skin tumours, Pathogenesis of skin malignancy, Malignant tumours, benign lesions that may be confused with skin cancer, Common skin infections and infestations, Bacterial infections, Viral infections, Fungal infections, Scabies, Lice, Acne and rosacea, Eczemas, Psoriasis and other erythematous scaly eruptions, Hair disorders Nail disorders, Common nail changes and disorders, Nail changes in systemic disease, The nail in congenital disease.

Practical's:

- Assessment methods
- Care of infected skin
- Education about the life style and hygiene
- History taking

Recommended books:

1. Illustrated Synopsis of Dermatology and Sexually transmitted disease by Neena Khanna 5th Edition
2. Davidson's Principals and practice of medicine 22nd edition
3. Oxford hand book of clinical medicine 9th edition
4. Kumar and Clark's Clinical Medicine 10th edition
5. Mohammad Inam Danish-Short Textbook of Medical Diagnosis and Treatment
6. Clinical Emergency Medicine

BHS- 614 Health Education Credit Hours: 2(2+0)

Course objectives:

By the end of this course, students will:

- Understand the principles and theories of health education.
- Develop skills to design, implement, and evaluate health education programs.
- Learn effective communication strategies for promoting health.
- Understand behavior change models and their application in public health.
- Gain practical experience in health education methods and tools.

Course Contents:

Introduction to Health Education, Principles of Health Education, Theories and Model in health behavior, communication in Health Education, Planning Health Education Programs, Method and material in Health Education, Health Promotion and behavioral change, evaluation of health Education Programs, Current Issue in Health Education.

Practical's:

- Develop health education materials such as posters, brochures, or videos.
- Use and evaluate health communication tools (e.g., apps, social media campaigns).
- Conduct a mock needs assessment for a community health issue.
- Evaluate an existing health education program using provided case studies

Recommended books:

1. Health Education: Creating Strategies for School & Community Health" by Glen G. Gilbert
2. Excel community medicine
3. Community Medicine by Ilyas Ansari

PMS- 626 Research Project Credit Hours:6(0+6)

Course Objectives:

- Students will learn some basic research methodology and gain knowledge about research.
- It will hopefully result insome of presentation or publicationfor the students and will provide a research oriented environment.

Course Contents:

During last year each student should select a topic of 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 researchproject should submit to examination for degree requirements fulfillment.

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

PMS—627 SEMINAR Hours: 1(1+0)

Course objective:
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.

Note: This 1st version course curriculum of BS Health technology is applicable to the batch 2021 to 2025 and onward unless an updated version is adopted.