

**CURRICULUM
OF
EASTERN MEDICINE
FOR
BEMS & M.Phil**

(Revised 2004)



**HIGHER EDUCATION COMMISSION
ISLAMABAD**

CURRICULUM DIVISION, HEC

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PREFACE

Curriculum of a subject is said to be the throbbing pulse of a nation. By looking at the curriculum of a subject, one can judge the state of intellectual development and the state of progress of a nation. The world has turned into a global village, new ideas and information are pouring in a constant stream. It is, therefore, imperative to update our curricula by introducing the recent developments in the relevant fields of knowledge.

In exercise of the powers conferred by sub-section (1) of section 3 of the Federal Supervision of Curricula Textbooks and Maintenance of Standards of Education Act 1976, the Federal Government vide Notification No.D773/76-JEA (Cur.), dated December 4, 1976, appointed Higher Education Commission as the Competent Authority to look after the Curriculum Revision Work beyond Class XII at Bachelor level and onwards to all Degrees, Certificates and Diplomas awarded by Degree Colleges, Universities and other Institutions of higher education.

In pursuance of the above decisions and directives, the Commission is continually performing curriculum revision in collaboration with the Universities. According to the decision of the special meeting of Vice-Chancellors' Committee, curriculum of a subject must be reviewed after every 3 years. For the purpose, various Committees are constituted at the national level comprising senior teachers nominated by the Universities. Teachers from local degree colleges and experts from user organizations, where required, are also included in these Committees.

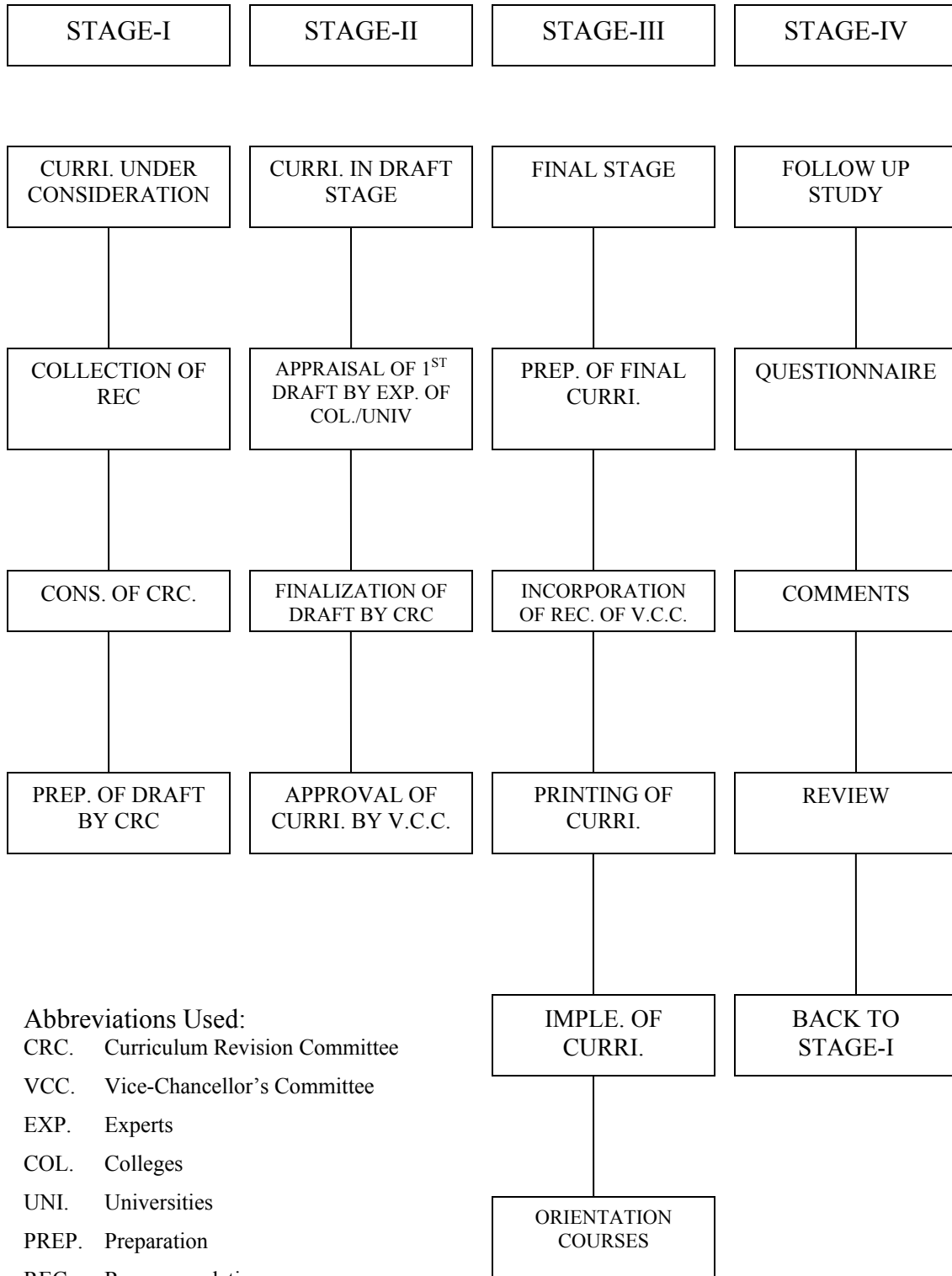
The National Curriculum Revision Committee on **Eastern Medicine** in its meeting held in May 2004 at the HEC Regional Centre, Karachi finalized the draft curriculum after due consideration of the comments and suggestions received from the Universities and Colleges where the subject under consideration is taught.

The Final draft prepared by the National Curriculum Revision Committee duly approved by Competent Authority is being circulated for implementation by the Universities.

(PROF. DR. ALTAF ALI G. SHAIKH)
Adviser (HRD)

July 2004

CURRICULUM DEVELOPMENT



INTRODUCTION

The National Curriculum Revision Committee meeting was held on 28-30 May, 2004 at HEC Regional Centre Karachi to finalize the draft curriculum developed in first NCRC meeting held on March 8-10, 2004. The following experts attended the meeting:

1. Prof: Hk. Dr. Abdul Hannan
Dean
Faculty of Eastern Medicine
Hamdard University
Karachi
Convener
2. Prof: Dr. Usman Ghani Khan
Head
Department of Pre-clinical Sciences
Faculty of Eastern Medicine
Hamdard University
Karachi
Member
3. Prof: Dr. Mansoor Ahmed
Department of Pharmacology
University of Karachi
Karachi
Member
4. Dr. Asrar Muhammad Khan
Chief, Qarshi Herb Centre
Qarshi Industries (Pvt.) Ltd.
Industrial Estate, Hattar
Dist. Haripur
Member
5. Mr. Shahzad Hussain Sheikh
Officer Incharge
Chemical Research Therapeutic Drug Monitoring
Drug Control and Traditional Medicines Division
National Institute of Health
Islamabad
Member
6. Hakim Umar Khattab
Vice President, National Council for Tibb
Islamabad
Member

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|-----|--|-----------|
| 7. | Mr. Azhar Mahmood
Product Manager
EMD, Qurshi Foundation, 9-Ali Block
Garden Town, Lahore | Member |
| 8. | Dr. Asif Saeed
Associate Professor, College of Pharmacy
University of the Punjab
Lahore | Member |
| 9. | Dr. M.A.K. Malghani
Dean Research
Centre for Bio-Technology & Informatics
Balochistan University of Information
Technology & Management Sciences
Jinnah Town, Samungli Road, Quetta | Member |
| 10. | Tabiba Amna Khalil
Lecturer
Faculty of Eastern Medicine
Hamdard University, Karachi | Member |
| 11. | Dr. Mahmood Ahmad
Principal/Associate Professor
University College of Conventional Medicine
Islamia University, Bahawalpur | Secretary |

The Meeting started with recitation of Holy Quran by Hakim Umar Khattab. The Chairman NCRC of preliminary meeting, Prof. Hk. Dr. Abdul Hannan, gave a brief review of the work done in the first meeting and the progress made uptill now for the preparation/revision of BEMS degree programme. The Adviser (HRD) HEC, Prof: Dr. Altaf Ali G. Shaikh while addressing the NCRC gave a brief introduction of the programmes being initiated by the HEC for uplifting of Higher Education in Pakistan. The NCRC unanimously agreed on Prof. Hk. Dr. Abdul Hannan, Dean, Faculty of Eastern of Medicine, Hamdard University, Karachi as Convener and Dr. Mahmood Ahmed Principal/Associate Professor, University College of Conventional Medicine, Islamia University, Bahawalpur as Secretary of the final National Curriculum Revision Committee.

The following curriculum was prepared in the NCRC meeting:

1. The course curricula of Bachelors of Eastern Medicine and Surgery (BEMS) was discussed and course contents agreed by members of NCRC Committee (annexure-I).
2. The course curricula of M.Phil/Ph.D in Eastern Medicine degrees was discussed and course contents were agreed by members of NCRC members (annexure-II).

The Committee members thanked Prof. Dr. Atta-ur-Rahman, Chairman, HEC, Prof. Dr. Altaf Ali G. Shaikh, Adviser (HRD), Ms. Ghayur Fatima, Mr. Dholan Das Khiyani, and other staff of HEC for arranging the NCRC meetings on Eastern Medicine and to facilitate members in revising the curriculum.

OBJECTIVES

Pakistan is a developing country and majority its popular is not provided with sufficient health facilities. For this reason, the quest for a system of Alternative Medicine was developed leading to the introduction of Eastern Medicine as a treatment and cure for the ailments and complications. The subject of Eastern Medicine will offer this alternative system for the needs and requirements in health care of our masses. Following are the objectives of teaching Eastern Medicine.

1. To bring out the graduates to enable the acquire methods of treatments and well aware of latest technologies and modern therapeutics. This will equip the graduates with enough knowledge, skills and clinical practices, so that they can be comparable to all other systems of medicine.
2. To enable the graduates to plan and execute research programmes aimed at solving the health problems of the country.
3. BEMS graduates should be able to demonstrate their professional responsibilities to the best interest of the patients exercising preventive, curative and promotive medicine.
4. To evaluate the science behind Eastern Medicine.
5. To determin how certain Eastern Medicine may fit into current wellness and treatment strategies.
6. To understand potential adverse effects, drug-nutrient interactions and indication for commonly used Eastern Medicine.
7. To communicate effectively with patients and clients regarding Eastern Medicine and answering questions about their use.
8. Understanding the ethical, legal and regulatory challenges related to Eastern Medicine.
9. Accessing essential resources for reliable information regarding botanical and nutrient products.
10. To educate other healthcare professionals, including physicians and nurses.

CURRICULUM FOR BEMS

SCHEME OF STUDIES

FIRST PROFESSIONAL

Theory

Paper 1.	Anatomy–I	=	100
Paper 2.	Physiology–I	=	100
Paper 3.	Biochemistry–I	=	100
Paper 4.	Principles of Eastern Medicine–I	=	100
Paper 5.	History of Eastern Medicine	=	100
Paper 6.	Islamic Studies/Ethical Behavior/ Pakistan Studies	=	100

Practical

Paper 7.	Anatomy–I	=	100
Paper 8.	Physiology–I	=	100
Paper 9.	Biochemistry–I	=	100

Total = 900

SECOND PROFESSIONAL

Theory

Paper 1.	Anatomy–II	=	100
Paper 2.	Physiology–II	=	100
Paper 3.	Biochemistry–II	=	100
Paper 4.	Principles of Eastern Medicine–II	=	100
Paper 5.	Pharmacognosy–I	=	100
Paper 6.	Bioinformatics	=	50

Practical

Paper 7.	Anatomy–II	=	100
Paper 8.	Physiology–II	=	100
Paper 9.	Biochemistry–II	=	100
Paper 10.	Pharmacognosy–I	=	100
Paper 11	Bioinformatics	=	50

Total = 1000

THIRD PROFESSIONAL

Theory

Paper 1.	Pharmacy	=	100
Paper 2.	Microbiology & Parasitology	=	100
Paper 3.	Community Medicine	=	100
Paper 4.	Materia Medica-I	=	100
Paper 5.	Pharmacognosy-II	=	100
Paper 6.	Clinical Methods and Therapeutics-I	=	100
Paper 7.	Forensic Medicine and Toxicology	=	100

Practical

Paper 8.	Pharmacy	=	100
Paper 9.	Microbiology & Parasitology	=	100
Paper 10.	Materia Medica-I	=	100
Paper 11.	Pharmacognosy-II	=	100

Clinical

Paper 12.	Clinical Methods and Therapeutics-I	=	100
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Total = 1200

FOURTH PROFESSIONAL

Theory

Paper 1.	Pathology	=	100
Paper 2.	Surgery-I	=	100
Paper 3.	Clinical Psychology & Psychiatry	=	100
Paper 4.	Materia Medica-II	=	100
Paper 5.	Obstetrics and Gynaecology-I	=	100
Paper 6.	Clinical Methods and Therapeutics-II	=	100

Practical

Paper 7.	Pathology	=	100
Paper 8.	Clinical Psychology & Psychiatry	=	100
Paper 9.	Materia Medica-II	=	100

Clinical

Paper 10.	Surgery-I	=	100
Paper 11.	Obstetrics and Gynaecology-I	=	100
Paper 12.	Clinical Methods and Therapeutics-II	=	100

Total = 1200

FINAL PROFESSIONAL

Gynaecology

Theory

Paper 1.	Paediatrics	=	100
Paper 2.	Ophthalmology and ENT	=	100
Paper 3.	Obstetrics & Gynaecology–II	=	100
Paper 4.	Surgery–II	=	100
Paper 5.	Clinical Diagnostics	=	100
Paper 6.	Clinical Methods and Therapeutics–III	=	100

Clinical

Paper 7.	Pediatrics	=	100
Paper 8.	Ophthalmology and ENT	=	100
Paper 9.	Obstetrics & Gynaecology–II	=	100
Paper 10.	Surgery–II	=	100
Paper 11.	Clinical Diagnostics	=	100
Paper 12.	Clinical Methods and Therapeutics–III	=	100

Total = 1200

TOTAL MARKS OF STUDY COURSE = 5500

DETAILS OF COURSES

BEMS FIRST PROFESSIONAL

ANATOMY-I (THEORY)

A. GENERAL ANATOMY

Brief History of Anatomy. Different Disciplines of the Subject.

Anatomical Nomenclature — Descriptive Terms.

Skeletal system-bones: Axial skeleton, Appendicle skeleton, Functions of bone, Classification on the basis of shape, development, region and structure, General concepts of development and ossification of bones, Parts of young bone, Blood supply of long bone, Applied Anatomy of bones

Joints: Structural classification, Regional classification, Functional classification, Characteristics and classification of Synovial joints, Movements of Synovial joints, Anatomy of joints with reference to dislocation, sprain and inflammation.

Muscle: Parts of muscle, Classification, Blood supply and nerve supply of muscle, Neuromuscular junction, Applied Anatomy of muscle with reference to spasm, paralysis, atrophy and regeneration.

Cardiovascular System: Introduction to CVS, Types of circulation, Anastomosis.

Introduction to Lymphatic System: Lymph node, Lymph capillary, Function.

Nervous System: Introduction to CNS, Different parts of CNS with their brief functions, Peripheral nervous system (cranial and spinal nerves) Introduction.

Autonomic Nervous System: Introduction to parasympathetic and sympathetic nervous system.

Skin and Fascia: Skin, superficial and deep fascia, introduction

Techniques to Study Anatomy: Introduction to radiograph, Radio opaque media, Special X-ray techniques like Barium Meal, Angiography, Ultrasound, C.T. Scan and MRI.

Embalming and Museum Keeping

B. GENERAL HISTOLOGY

Histology will be taught concurrently with anatomy throughout the course. Underlying principles of histological techniques and staining specific tissues should be explained. Most of teaching will be done on stained and mounted sections and every type of normal tissues will be covered.

Microscopy

Cell: Cell as a whole, Cell membrane, Interior of cell, Nucleus

Epithelial Tissues

Connective Tissue Proper

Cartilage

Bone

Muscular Tissue

Nervous Tissue and Nervous System: The nervous system, Cerebral cortex, Cerebral cortex, Spinal cord

Lymphoid Organ

Circulatory System

Integuments

Routine Histological Techniques

C. GENERAL EMBRYOLOGY

Male and female reproductive system

Cell division and Gametogenesis

Fertilization, cleavage, blastocyst formation and implantation

Development during second week

Development during third week

Embryonic period

Fetal period

Fetal membrane (amniotic cavity, yolk sac, allantois, umbilical cord and placenta)

Introduction to genetics and teratogenesis

Perinatology

ANATOMY-I (PRACTICAL)

1. Dissection of upper limb
2. Dissection of lower limb

3. Dissection of thoracic viscera

Note: Students shall maintain their practical Note Books with diagrams in accordance with the guidance of their relevant subject teachers and shall certify by the same teacher.

RECOMMENDED BOOKS

1. Romanes G J, **Cunningham's Manual of Practical Anatomy**. Oxford, Oxford University Press, 3 volumes (1996).
2. Gray's Anatomy, **Descriptive and Applied**. London, Longmans (1996).
3. J G Romanes, London **Cunningham's Textbook of Anatomy**. Oxford University Press (1996).
4. Snell R S, **Clinical Anatomy**, Boston, Little, Brown and Company (1996).
5. Keith L More and TVN Persaud, Philadelphia, **Clinically Oriented Human Anatomy**. W B Saunders (1996).
6. Nzeeruddin Ahmed, **Tashreh Moalijeem**, Qarreol Bagh, Delhi (1933).
7. Syed Muhammad Kamaluddin Hamdani, **Tashreh Hamdani**, Urdu Bazar, Lahore (1975).
8. Mohammed Saeed, **Kitabul Abadan**, Bait-al-Hikmat, Karachi (1993).
9. Nazeruddin Ahmed, **Tashreeh Moalijeem**, Part-I, Bhawalpur Govt., Tibbiya College, Bahawalpur (1965).

PHYSIOLOGY-I (THEORY)

Basic Concepts

General Physiology/Cell

Functional organization of human body

Homeostasis

Control system in the body

Cell membrane and its functions

Intracellular connections

Cell organelles

Transport through cell membrane

Genetics

Blood

Composition and general functions

Plasma proteins

Red blood cells (erythrocytes)

Hemoglobin and blood Indices, Iron metabolism, Fate of Hb

White blood cells, Leucopoiesis, functions

Platelets

Homeostasis

Blood Groups, Blood transfusion and Complication

Reticuloendothelial system- Spleen

Nerve and Muscle

The neuron – structure and functions

Properties of nerve fibers

Physiology of action potential including

compound action potential

Conduction of nerve impulse, Nerve degeneration and regeneration

Synapses

Structure of Muscle

Skeletal muscle contraction

Isometric and isotonic contraction

Smooth muscle contraction

Neuromuscular transmission

Excitation contraction coupling

Clinical/Applied Concepts

Abnormalities of cell and its organelles

Anemia

Blood indices in various disorders

Leucopenia, Leucocytes

Thrombocytopenia

Clotting disorders (Hemophilia etc.)

Blood grouping/cross matching and significance

Immunity

Nerve conduction studies

EMG

Nerve injury

Rigor mortis and contractures

Myasthenia gravis

Myopathies/Neuropathies

Motor unit

Neuromuscular blockers

Gastrointestinal Tract

Structure and general functions

Enteric nervous system (GUT Brain)

Mastication, swallowing and their control

Function and movement of stomach

Function and movements of small intestine

Function and movements of large intestine

Hormones of GIT

Vomiting and its pathway

Defecation and its pathway

Functions of liver

Cardiovascular System

Introduction to heart and circulation

Physiology of cardiac muscle

Action potential in atrial and ventricular

Muscle and pace maker potential

Regulation of cardiac muscle

Cardiac impulse –origin and propagation

Cardiac cycle various events

ECG- Recording and interpretation

Arrhythmias- mechanism of development

Functional types of blood vessels

Homodynamic of blood flow

Local Control of Blood flow

Systemic circulation, Characteristics And control

Regulation of peripheral resistance

Arterial pulse

Arterial blood pressure (short / long

Dysphasia, achlasia of esophagus

Examination of abdomen, Peptic Ulcer

Pancreatitis

Gastric function test

Vomiting and effects

Diarrhea, Constipation

Jaundice, Liver functions test

Correlation of cardiac cycle with ECG and heart sound

Significance of Apex beat/ Abnormalities

ECG- interpretation in cardiac muscle Abnormalities and cardiac Arrhythmias

Flutter fibrillation – ectopics

Conduction defects

Jugular venous pulse

Radial/other pulses

term Regulation)	
Cardiac output (regulation/measurement)	Hypertension types and effects
Heart sound/murmurs	
Venous rerun and its regulation	Clinical evaluation of heart sound and Murmurs.
Coronary circulation	Ischemic heart disease
Splanchnic circulation	Heart failure
Pulmonary circulation	Echocardiogram
Cerebral circulation	
Cutaneous circulation-triple response	Types of shock
Fetal circulation and readjustments at birth	
Cardiovascular changes during exercise	
Respiratory System	
Organization/functions of respiratory tract	Examination of chest
Function of lungs (respiratory and non-respiratory)	Types of respiration (intrapleural Pressure pneumothorax effusion)
Mechanism of breathing	Atelactasis
Surfactant and compliance	Lungs function test (Spirometry)
Protective reflex	
Lung volumes and capacities	Obstructive /restrictive lung disease (FEV1/FVC)
Dead space	
Diffusion of gases (gas law, composition)	
Ventilation/perfusion	Abnormal ventilation/ perfusion
Transport of oxygen in blood	
Transport of CO ₂ in blood	
Regulation of respiration (Nervous/chemical)	Respiratory failure
Abnormal breathing	Asphyxia
Hypoxia-types and effects	Hypoxia cyanosis dyspnoea
Physiology of cyanosis	Artificial respiration
Physiology of high altitude, space, deep sea diving	Oxygen therapy
Oxygen debt	
Respiratory changes during exercise	Caisson's disease

PHYSIOLOGY-I (PRACTICAL)

1. Skills Development:

- i.) To lay down the guidelines for understanding the principles of the function of the human body with emphasis on clinical and practical applications.
- ii.) To emphasize the importance of physiological concepts, measurements and experimental work of clinical application.
- iii.) To use the modern equipments for studying physiological functions such as ECG, EEG, spirometry and audiometry etc.
- iv.) To promote research acumen in students and introduction of Biostatistics.

2. Study of the microscope

3. **Hematology:** Hemoglobin Percentage Estimation, Erythrocyte sedimentation rate (ESR), Packed cell volume (PCV)/Haematocrit, Bleeding time (BT), Clotting time (CT), Blood Groups, Study of Neubauer Chamber, RBC's Count, Red cell indices WBC's Count, Differential leucocyte Count (DLC), Osmotic fragility of RBC's Demonstration of prothrombin time and thrombin time.

4. **Respiratory System:** Clinical examination of chest, Measurement of pulmonary volume and capacities (Spirometry), Stethography

RECOMMENDED BOOKS

1. Arthur C Guyton, M D, **Text Books of Medical Physiology**, W B Saunders Company, Ninth edition, 1996.
2. William F Ganong, **Review of Medical Physiology**, Prentice Hall International Inc., seventeenth edition, 1995.
3. Chandi Charan Chatterjee, **Human Physiology**, Medical allied agency, (1994).
4. Hakim Mohammad Said and Hakim Naeem uddin Zubairi, **Kitab-al-Abdan**, volume I and II Hamdard Press, (1987).
5. Hakim Khuaja Rizwan Ahmed, **Minafil-ul-Aaza**, Muktab-i-Darul Talifat, (1987).
6. Iqtidar-ul-Hassan Zaidi and Mohammad Zul Kafil, **Munafil-ul-Azza**, Saba Publishers Aligarh, (1998).
7. Khalid Zaman Khan, **Afaal-ul-Aaza**, Ajaz Publishing House Delhi, (1996).

BIOCHEMISTRY-I (THEORY)

1. Introduction to Biochemistry.

2. **Biochemistry of Cell:** Introduction to cell, Scientific methods to study the cell biochemistry, Biochemical composition of the cell.

3. **Biochemistry of the Cell and Body Fluids:** Ionization of water and weak acids, bases, Concept of pH, and pH scale, Dissociation constant and titration curve of weak acids, the concept of pK values, Buffers, their mechanism of action, Henderson-Hasselbalch Equation, Types of particles, solution, Importance of selectively permeable membranes, osmosis, osmotic pressure, surface tension, viscosity and their importance related to body fluids.

4. **Carbohydrates:** Definitions, biochemical functions and classification, Structure and function of Monosaccharide, and their derivatives, Disaccharides, their important examples, Oligosaccharides, their combination with other macromolecules, Polysaccharides, their important examples and biochemical role, The biomedical importance of carbohydrates.

5. **Proteins:** Definitions Biomedical importance and classification of proteins based on Physiochemical properties, Functional, Nutritional, Structural, Amino acids their structure, properties and functions, Classification and nutritional significance of amino acids, Dissociation titration and importance of amino acids in pH maintenance, Structure of proteins and their significance, Separation of proteins e.g. salting out, Electrophoresis, Chromatography, Centrifugation, Immunoglobulin and its biomedical significance, Plasma proteins and their clinical significance.

6. **Nucleotides and Nucleic Acid:** Chemistry and structure of nucleotides and their biomedical role, Nucleotides, structure, their derivatives and their biomedical role, Synthetic derivatives of Purine and Pyrimidine, their role in health and disease, Nucleic acids, their types, structure and function.

7. **Lipids:** Definition, biomedical function, Classification of lipids, Phospholipids, Glycolipids, Sphingolipid and their biomedical significance, Fatty acids, chemistry, classification and biomedical functions, Essential fatty acids, Eicosanoids, their classification and functions in health and disease, Steroid, sterol e.g. Cholesterol, their chemistry, functions and clinical significance, Lipid per oxidation and its significance.

- 8. Biological Membranes:** Biochemical composition, Biochemistry of cell membrane, chemical composition, importance of lipid and proteins in membranes, chemistry of signals and receptors, Biochemistry of membranes transport mechanism, active transport, passive transport, simple and facilitated diffusion.
- 9. Enzymes:** Introduction definition mechanism of catalysis, Coenzymes, Co. factors, Iso enzymes their clinical significance, Factors affecting enzyme activity Michaelis-Menten Equation, Lineweaverburk equation and their application in enzymes kinetics, Enzymes inhibitor their classification and biomedical importance, Application of enzymes in clinical diagnosis and therapeutic use.
- 10. Porphyrin and Hemoglobin:** Chemistry and biosynthesis of porphyrins and its disorders, Structure, functional and types of hemoglobin, Oxygen binding capacity of hemoglobin, factor effecting of regulation the oxygen binding capacity of hemoglobin, Degradation of heme formation of bile pigment its types transport and excretion, Hyperbilirubinemia their biochemical causes and differentiation jaundice and its types, Hemoglobinopathies (Hb-s, thalassaemia etc.) and their biochemical causes.
- 11. Vitamins:** Introduction classification, Chemistry biochemical functions deficiency manifestations daily allowances and source of water soluble and fat soluble vitamins, Hypervitaminosis.
- 12. Biochemistry of Digestive Tract:** Introduction of digestion and absorption, Introduction and composition functions daily secretion stimulants and depressant of: saliva; i) Gastric juice and HCl. ii) Pancreatic juice, iii) Bile juice iv) Succus Entericus, Digestion and absorption of carbohydrates, proteins, nucleic acid and lipids, Biochemical disorders of GIT e.g. achlorhydria, peptic ulcers lactose intolerance, cholelithiasis and related disorders.
- 13. Mineral and Trace Elements:** Classification and biochemical role; Macro minerals (Na, K, Ca, Cl, PO₄), Micro minerals (Fe, Zn, Mg, Se, I, Cu, Cd, Mn).

BIOCHEMISTRY-I (PRACTICAL)

1. Introduction to use of Laboratory facilities/equipments.
2. Basic techniques and fundamental information.
3. Preparation of solutions – Normal solution and Normal saline.
4. Experiments on Carbohydrate – Qualitative Analysis.
5. Experiments on Proteins – Qualitative Analysis.

6. Experiments on Fats – Qualitative Analysis.
7. Chemical Analysis of Urine – Normal and Abnormal Specimens.

RECOMMENDED BOOKS

1. M N Chatterjea, **Medical Biochemistry**, Jaypee Brothers Medical Publishers, New Delhi (2003).
2. Roberk Murray, Daryl K, Granner, Peter A Mayes, Victor W Rodwell, **Harper Biochemistry**, Appleton and Lange, Lange Medical Publications, New York (2000).
3. Albert L Lehninger, **Principles of Biochemistry**, CBS Publisher, Delhi (1993).
4. Lubert Stryer, **Biochemistry**, W H Freeman and Company (2002).
5. M Waseem, **Hayati Keemya**, Vol. 1 and Vol.2, Urdu Science College, Karachi (1996).
6. Pamela C Champe, Richard A Harvey, **Illustrated Biochemistry**, J Lippincot Company (1994).

PRINCIPLES OF EASTERN MEDICINE-I (THEORY)

1. **TIBB (Medicine):** Definition, Classification
2. **KULLIYAT (Principles of Medicine):** Definition, Classification
Umoor-e-Tabiah (Physical or Fundamental Principles): Definition
Tabi'at (Physis)
Anasir (Elements): Definition, Theories, Four elements i) AAG (Fire), ii) HAWA (Air), iii) PANI (Water), iv) MITTI (Earth) and their characteristics, Modern elements in human body, Role of elements in cell formation.
Mizaj (Temperament): Definition, Classification, Temperament of equatorials (Regions), Temperament of human body according to sex and stages of age.
Akhlat (Humors or body fluids): Definition, Classification, Four humors; Khoon/Dam (Blood), Bulgham (Phlegm), Safra (Bile), Sauda (Black Bile), Types of Digestion.
Aaza (Organs): Definition, Classification.
Arwah (Pneuma): Definition, Classification, Theories.
Quwa (Forces/Facyktues): Definition, Classification.
Afaal (Functions): Definition, Classification.
3. **STATES OF BODY:** Health, Disease, Intermediate; Definition, Diseases, Classification, Stages, Nomenclature.

4. **ILMULASBAB (Etiology):** Definition, Classification, General causes, Six Essential Causes, Air, Food and Drinks, Movement of rest of body, Movement of rest of Pneuma, Sleep and Awakens, Elimination and retention, Non-Essential causes.

RECOMMENDED BOOKS

1. Hakim Mohammad Kabeeruddin, **Kulliyat-e-Qanoon** (Translated), Shaikh Muhammad Bashir and Sons, Lahore (1930).
2. Hakim Khawaja Rizwan Ahmed, **Kulliyat-e-Qanoon** (Translated) Darul Talifat, Karachi (1971).
3. O Cameron Gruner (Ed.), **A Treatise on the Cannon of Medicine of Avicenna**, Luzac and Co, London (1930).
4. Hakim Muhammad Kabiruddin, **Kulliyat-e-Nafeesi**, Matbuat-e-Sulemani, Lahore (1934).
5. Hakim Khawaja Rizwan Ahmed, **Moojazul Qanoon**, Darul Talifat, Karachi (1987).
6. Iftikhar-ul-Hassan Nadvi, **Tauzeeh-ul-Moojiz**, Islamic Publications, Khanewal (1981).
7. Altaf Ahemed Azmi (Ed.), **Mabadiyat-e-Tibb**, Liaquat Ali, Lahore (1992).
8. Rasheed Ashraf Nadvi, **Firdaus-al-Hikmat**, Diamond Publications, Lahore (1996).

HISTORY OF EASTERN MEDICINE (THEORY)

1. Medicine in the Muslim Spain; eminent physicians, institutions and their contributions.
2. Introduction of medical literature in Europe; the list of translators from Arabic to Latin; the School of Salerno.
3. Introduction of medicine in the Indo-Pak sub-continent; the progress of medicine in the Islamic periods of the sub-continent; Medicine during the British period; eminent men of Medicine in the sub-continent. The noted physicians such as Hakim Akber Arzani, Hakim Muhammad Hashim Alvi Khan, Hakim Muhammad Sharif Khan, Hakim Muhammad Azam Khan, Hakim Ajmal Khan, Hakim Abdul Aziz, Hakim Abdul Latif, Hakim Muhammad Najmul Ghani, Hakim Ghluam Shifaul Mulk, Hakim Muhammad Hasan Qarshi, Hakim Abdul Hamid Dehlavi, Hakim Muhammad Said.
4. Abul Qasim Zahravi, Ibn Wafid, Ibn Juljul, Ibn Al-Jazzar, Ibn Bayatar, Ibn Rushd (Averroes) Ibn Zohr, Moosa Bin Maym (Maimonides)

RECOMMENDED BOOKS

1. Ibn Abi Usaybiyah, **Uyun-al-Anba fi Tabqat-al-Atibba** (Arabic), CCRUM, New Delhi, India, Part I and II (1992).
2. Hakim Syed Mohammad Hassan Nagrami, **Tarikh Tibb, Ibtida ta Ahad Hazir** (Medicine through the ages), Taraqqi Urdu Bureau, West Block R K Porum, New Delhi, India (1996).
3. Hakim Dr Ghulam Jilani, **Tarikhul Atibba**, Shaikh Mohammad Bashir and Sons, Lahore, Pakistan (1996).
4. Edward G Browne, **The Arabian Medicine**, Cambridge University Press (1992).
5. Sir Thomas Arnold, **The Legacy of Islam**, Oxford University Press (1992).
6. Manfred Ullman, **The Islamic Medicine**, Edinburgh University Press (1992).
7. S.Hossein Nasir, **Science and Civilization in Islam**, Harvard University Press, pp.388 (1984).
8. Loaster S. King, **A History of Medicine**, Penguin Books, London, pp 316 (1971).
9. SAR Hamdani, **Notable Muslim Names in Medical Science**, Feroze Sons, Lahore, pp 118 (1996).
10. Syed Zilur-Rehman, **Tazkar-e-Khandan Azeezi**, Ajmal Khan Tibbiya College Muslim University, Aligarh (nd).
11. Dictionary of Scientific Biography. Vol. 1–6 Charles Scribner's Sons, New York, (1970).
12. Jamal-ud-din Qifti, **Tarikh-ul-Hukmah**, translated by Gulam Jilani Barq, Anjuman Urdu Taraqqi (India), Delhi pp 01-524 (1945).
13. Edward G Browne, **Tibb-ul-Arab**, translated by Hakim Sayed Ali Ahmed Nayer Wasti, Idra-e-Saqafat-e-Islamia, pp 01-529 (1954).
14. Seyyed Hossein Nasr, **Islam Meyn Science Aur Tehzeeb**, Hamdard Foundation Press, Karachi, Pakistan (1988).
15. Munawwar Jehan Rashid, **Musalmanon Ki Tibbi Khidmat**, Shaikh Ghulam Ali and Sons (1994).
16. Hakim Seyyed Ali Kausar Chandpuri, **Atibba-e-Ahde Mughliya**, Hamdrd Academi, pp 01-208 (1955).

ISLAMIC STUDIES/ETHICAL BEHAVIOUR, PAKISTAN STUDIES (THEORY)

The Syllabus as approved by Higher Education Commission

BEMS SECOND PROFESSIONAL

ANATOMY-II (THEORY)

GROSS ANATOMY

Head and Neck: Osteology [Skull, (Articulated), Hyoid Bone, Cervical Vertebrae], Scalp, the temple and the face, The side of the neck, The dissection of the back, Triangles of neck, Cranial Cavity, Deep dissection of neck, Pre-Vertebral region, The orbit, The Parotid region, Temporal and Infratemporal region, The sub-mandibular region, The Mouth and Pharynx, The Cavity of nose, The Larynx, The Tongue, The contents of the vertebral canal, The organs of hearing and equilibrium, The eye ball, The joints of the neck.

Abdomen, Pelvis and Perineum: Osteology: (Lumbar Vertebrae, Sacrum, and Bony Pelvis), Ant: Abdominal wall, Male external genital organ, Abd: part of oesophagus, Stomach, Intestines, Large blood vessels of Gut, Extra-hepatic Biliary apparatus, Spleen, Pancreas, Liver, Kidneys, Ureters and Supra renal glands, Diaphragm, Post: Abdominal wall, Lesser Pelvis, Perineum, Urinary bladder and Urethra, Female reproductive organs, Male reproductive organs, Rectum and Anal canal, Surface Marking, Radiology

Brain: *Has to be briefed without going into deep details;* Meninges, Blood supply, Spinal cord, Medulla oblongata. Pons, Cerebellum, Mid brain, Cerebrum with function, Ventricles of brain and CSF, Nuclei of Cranial nerves.

Embryology: Embryonic period (Differentiation of ectoderm, Differentiation of mesoderm, Folding of embryo, Differentiation in endodermal layer), Changes in second month, Foetal period development, Foetal membrane (yolk sac allantois and choriion, Amniotic cavity and umbilical cord, Placenta).

Special Embryology: Skeletal System, Muscular System, Body Cavities and Serous Membranes, Cardiovascular System, Respiratory System, Digestive

System, Urogenital System, Head and Neck, Ear, Eye, Integumentary System, Central Nervous System.

HISTOLOGY

GIT; Tongue, Esophagus, Stomach, Duodenum, Jejunum, Ileum, Appendix, Large intestine, Rectum, Anal Canal, Liver, Gall Bladder, Pancreas, Parotid gland, Sub-mandibular gland, Sub Lingual gland).

Respiration: (Trachea, Lung).

Urinary System: (Kidney, Ureter, Urinary bladder, Urethra).

Glands: (Thyroid, Parathyroid, Adrenal, Pituitary, Mammary).

Reproduction: (Testis, Epididymis, Prostate, Ovary, Uterus).

ANATOMY-II (PRACTICAL)

1. Dissection of Head Neck and Brain
2. Dissection of Pelvic Viscera

Note: Students shall maintain their practical Note Books with diagrams in accordance with the guidance of their relevant subject teachers and shall certify by the same teacher.

RECOMMENDED BOOKS

1. Romanes, G J, **Cunningham's Manual of Practical Anatomy**. Oxford, Oxford University Press, 3 volumes (1996).
2. Gray's Anatomy, **Descriptive and Applied**. London, Longmans (1996).
3. J G Romanes, London **Cunningham's Text book of Anatomy**. Oxford University Press (1996).
4. Snell R S, **Clinical Anatomy**, Boston, Little, Brown and Company (1996).
5. Keith L. More and T.V.N. Persaud, Philadelphia, **Clinically Oriented Human Anatomy**, W B Saunders (1996).
6. Nzeeruddin Ahmed, **Tashreh Moalijeem**, Qarreol Bagh, Delhi (1933).
7. Syed Muhammad Kamaluddin Hamdani, **Tashreh Hamdani**, Urdu Bazar, Lahore (1975).
8. Mohammed Saeed, **Kitabul Abadan**, Bait-al-Hikmat, Karachi (1993).
9. Nazeruddin Ahmed, **Tashreeh Moalijeem**, Part 1, Bhawalpur Govt, Tibbiya College, Bahawalpur (1965).

PHYSIOLOGY-II (THEORY)

Blood fluids and Kidneys

Compartments of body fluids and measurement

Renal function test

Tissue and lymph fluids

Fluid Excess/depletion

Structure of kidney/Nephron

General functions of kidney

GFR factors regulating

Formation of urine filtration, reabsorption, secretion, Plasma

Clearance

Concentration and dilution of urine

Renal failure/uremia

Electrolyte balance

Water balance

Regulation of blood pressure by kidneys

Nephrotic syndrome

Hormones of kidney

Acidification of urine

Artificial kidney/Hemodialysis

Acid base balance

Metabolic acidosis/Alkalosis

Micturition

Abnormalities of micturition including incontinence

Nervous System

Organization of CNS

Significance of Dermatomes

Classification of nerve fibers

Properties of Synaptic transmission

Neurotransmitters and neuropeptides

Types and functions of Sensory receptors

Receptors and Neurotransmitters (applied aspect)

Functions of spinal cord ascending tracts

Reflex action/Reflexes

Interpretations of reflexes

Muscle spindles/muscle tone

UMN/LMN lesion features and localisation

Tactile, temperature and pain sensations

Injuries and diseases of spinal cord

Structure of cerebral cortex

Analgesia system

Sensory cortex

Disorders of cranial nerves

Motor cortex	Hemiplegia/Paraplegia
Motor pathways, Pyramidal and Extrapyramidal	
Basal ganglia, connections and functions	Parkinsonism and other lesions of basal ganglia
Cerebellum, connections and functions	Cerebellar Disorders
Vestibular Apparatus/Regulation of Posture and equilibrium	Sleep Disorders
Reticular formation	
Physiology of sleep EEG	
Physiology of memory	Higher mental function assessment
Physiology of speech	Abnormalities of speech
Thalamus-nuclei and functions	Thalamic syndrome
Hypothalamus limbic system	Lesion of Hypothalamus
Cerebrospinal fluid	
Regulation of body temperature	
Functions of skin	Hydrocephalus
Autonomic nervous system	
Physiology of aging	
Special Sences	
Structure and function of eye-ball	Intraocular pressure and Glaucoma
Optical principles	
Accommodation of eye	
Errors of refraction	Visual acuity
Photochemistry of vision	
Color vision/night blindness	Color blindness fundoscopy
Dark and light adaptation	
Neural function of Retina	
Visual pathway light reflex and pathway	Field of vision and lesions of visual pathway
Visual cortex	
Intra ocular fluids	Visual evoked potentials and electroretinogram
Eye movements and control	
Physiological anatomy of chochlea	
Functions of external and middle Ear	
Functions of inner Ear-Organ of Corti	Hearing test audiometry
Auditory pathway	Types of deafness, Auditory

Physiology of smell-receptors and pathway	evoked potentials
Physiology of taste	Olfaction/Taste abnormalities
Endocrinology	
General principles (classification, mechanism of action feed back control)	Acromegaly, Giantism
Biosynthesis, transport, metabolism, actions and control of secretion of hormones	Hormonal assay
Hypothalamus	Dwarfism
Anterior pituitary	Panhypopituitarism, Sheehan's syndrome
Posterior pituitary	Diabetes inspidus
Thyroid gland, Parathyroid, calcitonin	Myxoedema, Cretinism, thyrotoxicosis, Pheochromocytoma
Adrenal medulla, Adrenal cortex	Syndrome of inappropriate ADH secretion, Cushin's syndrome, Conn's syndrome, Addison's disease
Pancrease	Diabetes Mellitus and Hypoglycemia
GIT	
Pineal gland	
Thymus	
Kidney	Adrenogenital syndrome
Physiology of growth	Zollinger Ellison's syndrome
Reproduction	
Functional anatomy of Male reproductive system	Chromosomal abnormalities
Spermatogenesis	
Semen analysis	Male infertility
Erection and ejaculation	
Testosterone	
Male puberty	
Oogenesis and functional anatomy of female gonads	
Oestrogen and progesterone	Female infertility
Menstrual cycle	Contraception
Puberty and menopause	

Pregnancy — Physiological changes in mother during pregnancy Pregnancy Tests
Placenta
Parturition
Lactation
Neonatal Physiology

PHYSIOLOGY-II (PRACTICAL)

1. **Nervous System:** Examination of superficial reflexes, Examination of deep reflexes, Examination of sensory, motor system, Clinical examination of cranial nerve.
2. **Cardiovascular System:** Frog's heart, Recording of normal cardiogram and effect of temperature, Effect of drug on cardiac contractility, Effect of ions on cardiac contractility, Properties of cardiac muscles in frog heart (Demonstration), Study of sheep's heart, Cardiopulmonary resuscitation, Cold pressor test, Triple response, Examination of arterial pulse, ECG recording/interpretation, Measurement of arterial blood pressure, Effect of exercise and posture on BP, Examination of Apex Beat, Heart Sounds- auscultation of normal sounds/murmurs.
3. **Special Senses:** Field of vision by confrontation method, Field of vision by Perimetry, Light reflex, Ophthalmoscopy, Visual acuity, Color vision, Hearing tests, Audiometry, Taste Sensation, Olfaction sensation.
4. **Frog's Nerve and Muscle:** Simple muscle twitch (SMT) in frog and effect of temperature, Effect of fatigue on muscle contraction, Tetanization in frog's muscle (Demonstration), Effect of two successive stimuli on SMT, Effect of preload and after load on SMT, Determination of velocity of conduction in sciatic nerve, Use of physiograph (polygraph), Elicit fatigue in human index finger.
5. **Miscellaneous:** Recording of body temperature, Pregnancy tests, Introduction to biostatistics e.g. data collection and analysis.

RECOMMENDED BOOKS

1. Arthur C Guyton, M D, **Text Books of Medical Physiology**, W B Saunders Company, Ninth edition, (1996).
2. William F Ganong, **Review of Medical Physiology**, Prentice Hall International Inc., seventeenth edition, (1995).
3. Chandi Charan Chatterjee, **Human Physiology**, Medical allied agency, (1994).
4. Hakim Mohammad Said and Hakim Naeemuddin Zubairi, **Kitab-al-Abdan**, volume I and II Hamdard Press, (1987).

5. Hakim Khuaja Rizwan Ahmed, **Minafil-ul-Aaza**, Muktab-i-Darul Talifat, (1987).
6. Iqtidar-ul-Hassan Zaidi and Mohammad Zul Kafil, **Munafil-ul-Azza**, Saba publishers Aligarh, (1998).
7. Khalid Zaman Khan, **Afaal-ul-Aaza**, Ajaz publishing House Delhi, (1996).

BIOCHEMISTRY-II (THEORY)

1. **Bioenergetics and Biological Oxidation:** Endergonic and Exergonic reactions, their coupling through ATP, Biological Oxidation and reduction, methods of electron transferring, redox potential, enzymes and coenzymes of biological oxidation and reduction, Respiratory chain and oxidative phosphorylation, components of respiratory chain, electron carriers, ATP synthesis coupled with electron flow, phosphorylation of ADP coupled to electron transfer, The ATP-synthase, their relation to proton pump, PMF, and active transport, Uncouplers and inhibitors of oxidative phosphorylation.
2. **Introduction to Metabolism.**
3. **Metabolism of Carbohydrates:** *Glycolysis*; Phases and reactions of Glycolysis, Energetics of aerobic and anerobic glycolysis and their importance, Regulation of glycolysis, The fate of pyruvate. *The Citric Acid Cycle*; Reactions, Energetics and regulation and importance of Citric acid cycle, Amphibolic nature of citric acid cycle. The anapleratic reactions and regulations of TCA cycle. *Gluconeogenesis*; Important three by-pass reactions of Gluconeogenesis, Entrance of amino acids and intermediates of TCA cycle and other nutrients as gluconeogenic substrates, Significance of Gluconeogenesis. *Glycogen metabolism*; Reactions of Glycogenesis and Glycogenolysis, Importance of UDP-Glucose, Regulation of Glycogen Synthase and Glycogen Phosphorylase, Glycogen Phosphorylase 'a' and the blood Glucose sensor, Disorders of glycogen metabolism (Glycogen storage diseases). *Secondary pathways of carbohydrate (Hexose) Metabolism*; Hexose monophosphate shunt, its reactions and importance, *Glucuronic acid pathway*; its reactions and importance. *Metabolism of Fructose, Galactose and Lactose, Regulation of blood glucose level*; Hyperglycemia, hypoglycemia and their regulating factors, *Biochemistry of Diabetes Mellitus*; its Laboratory findings and Diagnosis.
4. **Metabolism of Lipids:** *Mobilization and transport of fatty acids, tricylglycerol, and sterols, Oxidation of fatty acids*; Activation and transport of

fatty acid in the mitochondria, β -oxidation, fate of Acetyl CoA, regulation of β -oxidation, Other types of oxidation, i.e. alpha-oxidation, ω -oxidation, peroxisome oxidation, oxidation of odd number carbon containing fatty acids and unsaturated fatty acids etc., **Ketogenesis**; Mechanism and utilization of ketone bodies and significance, Ketosis and its mechanism, **Biosynthesis of fatty acids, Eicosanoids**; Synthesis from Arachidonic acid, their mechanism and biochemical functions, **Triacylglycerol**; synthesis and regulation, **Synthesis and degradation of phospholipids and their Metabolic Disorders, Cholesterol Synthesis**; Regulation, Functions, Fate of intermediates of Cholesterol synthesis, Hypercholesterolemia, Atherosclerosis, **Plasma Lipoproteins**; VLDL, LDL, HDL, and Chylomicrons, their transport, functions and importance in health and disease, **GLycolipid metabolism**; abnormalities.

5. **Metabolism of Proteins and Amino Acids:** Amino acid oxidation, metabolic fates of amino acid, transamination, deamination decarboxylation, deamidation and transdeamination, Transport of amino group, role of Pyridoxal phosphate, Glutamate, Glutamine Alanine, Ammonia intoxication, Nitrogen excretion and Urea formation, Urea cycle and its regulation, genetic defects of Urea cycle, Functions, pathways of amino acid degradation and genetic disorders of individual amino acids.
6. **Integration and Regulation of Metabolic Pathways in Different Tissues.**
7. **Metabolism of Nucleotides:** De Novo Purine synthesis, Synthesis of Pyrimidine, Recycling of purine and pyrimidine bases (The salvage pathway), Degradation of purine, formation of Uric acid, Disorders of purine nucleotide metabolism.
8. **Biochemical Genetics (Informational Flow in the Cell):** The structural basis of cellular information, DNA, Chromosomes, Discovery and organization of DNA in Genomes, Super coiling of DNA, The replication of DNA (DNA dependent DNA synthesis), DNA polymerase, its components and functions, Initiation, elongation and termination of Replication, DNA Repair, Mutation and Cancers, The Transcription (DNA dependent DNA synthesis), RNA polymerase, its components and functions, Initiation, Elongation and termination of transcription, RNA processing, RNA dependents synthesis of RNA and DNA, Reverse transcription-DNA synthesis from viral RNA, Retroviruses in relation to cancer and AIDS, Translation (Protein Synthesis), The genetic codes and their characteristics, Initiation, Elongation, and termination of protein synthesis, Post-translational modification, Regulation of Gene Expression, Molecular biology technology, DNA isolation, DNA-recombinant technology, Hybridization, blotting techniques, Genetic Disorders.

9. **Biochemistry of Endocrine system:** Chemistry, Secretion, Mechanism of action, regulation and effect on Carbohydrates, Lipids, Proteins, Mineral and Water metabolism and disorders of various endocrine glands.
10. **Biochemistry of Water and Electrolyte imbalance and Acid Base Balance.**
11. **Nutrition: *Caloric requirement of the body, Balanced diet, Protein Energy Malnutrition; Marasmus, Kwashiorkor, Marasmic – kwashiorkor, Nutritional requirements in; Pregnancy, Lactation, Newborn, In nutritional disorders.***

BIOCHEMISTRY-II (PRACTICAL)

1. The techniques and instrumentation of clinical biochemistry: Spectrophotometry, Flame photometry, UV Spectrophotometry, PH metry, Collection and preservations of clinical specimens.
2. Estimation and clinical interpretation of: Blood glucose, Glucose Tolerance Test (Demonstration).
3. Determination of Amino acids in Urine by Paper Chromatography (Demonstration).

RECOMMENDED BOOKS

1. M N Chaterjea, **Medical Biochemistry**, Jaypee Brothers Medical Publishers, New Delhi (1998).
2. Roberk Murray, Daryl K, Granner, Peter A Mayes, Victor W Rodwell, **Harper Biochemistry**, Appleton and Lange, Lange Medical Publications, NewYork (2000)
3. Albert L, Lehninger **Principles of Biochemistry**, CBS Publisher, Delhi (1993).
4. Lubert Stryer, **Biochemistry**, W H Freeman and Company, (2002).
5. M Waseem, **Hayati Keemya**, Vol. 1 and Vol 2, Urdu Science College, Karachi (1996).
6. Pamela C Champe, Richard A Harvey **Illustrated Biochemistry**, J Lippincot Company (1994).

PRINCIPLES OF EASTERN MEDICINE-II (THEORY)

1. **Etiology:** Advance understating of Etiology with particular reference to classification.
Essential and non-essential causes, Detailed discussion on Six Essential causes: Air, Foods, Drink, Movement and rest of body, Movement and rest of Pneuma, Sleep and awakens, Elimination and retention, Non-Essential causes.
2. **Special Causes:** Definition, Classification, Symptoms of external and internal diseases, Symptoms (rules) for estimation of body temperament, Symptoms of Maltemperament, Symptoms of Plethora, Obstruction, Gases, Swelling, Loss of continuity.
3. **Pulse:** Definition, Condition, Points to be considered in the Examination of pulse, Normal pulse, Simple pulses, Compound pulses, Factors effecting the pulse: Age, Sex, Temperament, Essential and non-Essential causes.
4. **Urine:** Definition, Condition, Points to be considered in the Examination of urine, Normal urine, Effect of age and sex on urine.
5. **Stool:** Definition, Condition, Points to be considered in the Examination of stool, Normal stool.
6. **Preservation of Health:** Introduction, Objective, Why Death is unavoidable, Care in six essential causes, Exercise, Bath, Massage.
7. **Treatment/Therapeutics:** Introduction and Classification, Treatment with Essential Causes/Regimental Therapy, Treatment with foods, Management in other essential causes.
8. **Treatment with Medicine:** Basic Laws, Law of Quality, Law of Quantity, Law of Time.
9. **Line of Treatment of Maltemperament:** Diversion, Elimination, Definition, Objectives, Conditions, Types, Sources (Purgation, Vomiting, Venesection, Enema, Leeching, Cupping), Line of treatment of Swelling, Pain and Obstruction.
10. **Treatment with Hand/Surgery:** Line of treatment of loss of continuity and Abscess, Cauterization

RECOMMENDED BOOKS

1. Hakim Mohammad Kabeeruddin, **Kulliyat-e-Qanoon** (Translated), Shaikh Muhammad Bashir and Sons, Lahore (nd).
2. Hakim Khawaja Rizwan Ahmed, **Kulliyat-e-Qanoon**, (Translated), Darul Talifat, Karachi (1971).
3. O Cameron Gruner (Ed.), **A Treatise on the Cannon of Medicine of Avicenna**, Luzac and Co, London (nd).
4. Burhanuddin Nafees, **Kulliyat-e-Nafeesi** (Translated), Matbuat-e-Sulemani, Lahore (nd).
5. Hakim Khawaja Rizwan Ahmed, **Moojazul Qanoon**, Darul Talifat, Karachi (1987).
6. Iftikhar-ul-Hassan Nadvi, **Tauzeeh-ul-Moojiz**, Islamic Publications, Khanewal (1981).
7. Altaf Ahmed Azmi (Ed.), **Mabadiyat-e-Tibb**, Liaquat Ali, Lahore (1992).
8. Rasheed Ashraf Nadvi, **Firdaus-al-Hikmat**, Diamond Publications, Lahore (1996).

PHARMACOGNOSY-I (THEORY)

1. **Introduction:** Historical development and scope of Pharmacognosy in Pakistan, Classification of crude drugs with special emphasis on chemical and therapeutic system, Terminology.
2. **General Pharmacognosy:** Preparation of crude drugs for commercial market, methods of cultivation, drying, storage, preservation, packing, deterioration and adulteration of crude medicine, Evaluation of crude medicine i.e. organoleptic, microscopic, physical, chemical and biological.
3. **The Study of the Plant Families Yielding Crude Drugs:**

Families	Crude Medicine
A. Ranunculaceae	Aconitum, Larkspur, Pulsatilla, Hydrastis.
B. Papaveraceae	Sanguinaria.
C. Leguminosae	Acacia, Glycyrrhiza, Senna, Cassia, Tamarind.
D. Umbelliferae	Fennel, Carum, Coriander, Conium, Asafoetida.
E. Apocynaceae	Rauwolfia, Catharanthus, Strophanthus.

F.	Solanaceae	Belladonna, Hyoscyamus, Stramonium Capsicum.
G.	Scrophulariaceae	Digitalis, Verbascum (Mullien).
H.	Labiatae	Peppermint, Thyme, Spearmint, Salvia, Ocimum.
I.	Liliaceae	Garlic, Colchicum, Aloe.
J.	Zingiberaceae	Ginger, Curcuma.
K.	Stophanthus	

4. **Allergens and Allergenic Preparation:** Introduction, case history, irritancy, skin test, treatment of allergy, inhalant, ingestant, injectant, contactant, infectant and infestant allergens. Mechanism of allergy.
5. **Enzymes:** Enzymes obtained from plant source. (phytoenzymes), Papain Bromelain and Malt Extract, Enzymes obtained from Animal source, Rennin pepsin, Pancreatin and pancrelipase.
6. **Plant Growth Regulators:** General account with special reference to Auxins, Gibberellins Abscisic acid, Cytokinins and Ethylene.
7. **Poisonous Plants:** General introduction of poisonous plants with special reference to Pakistan.
8. **Pesticides:** Introduction. Methods of controlling pests with special reference to natural methods.
9. **Antioxidants:** Cucumber, Amla, Orange, Lemon etc.

PHARMACOGNOSY-I (PRACTICAL)

1. Introduction of the entire and broken parts of the plant drugs (Macro and organoleptic characters)
2. Microscopic examination of powders and sections of plant drugs.
3. Study Tour for collection of medicinal plants from various areas of country.

RECOMMENDED BOOKS

1. V E Tyler, L R Brady and J E Robbers, **Pharmacognosy**, 9th Eds. Lea and Febiger, Philadelphia, 1988.

2. G E Trease and W C Evans, **Pharmacognosy**, W B Saunders, Philadelphia, Toronto, 2002.
3. H Wagner, **Pharmazeutische Biologie**, Gustav Fischer Verlag, Stuttgart, (German Language), 1982.
4. **WHO Monographs on Selected Medicinal Plants**, Vol 1, World Health Organization, and Geneva, 1999.
5. Betty P Jackson, **Atlas of Microscopy of Medicinal Plants, Culinary Herbs and Spices**, CBS Publishers, New Delhi, 2000.
6. **PDR for Herbal Medicines**, Medical Economics Company, New Jersey, Second Edition 2000.
7. Hson-Mou CHANG, Paul Pui Hay BUT, **Pharmacology and Application of Chinese Materia Medica**, Vol I and II, World Scientific Publishing Co (1983).
8. Iqbal Ahmad, Khan Usmanghani, **Analysis of Medicinal Compounds and Plant Drugs**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp165 (2003).
9. Iqbal Azhar, Khan Usmanghani, **Essential Oils**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp324 (2002).
10. K Usmanghani, **Herbal Medicine Industry in Pakistan**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp225 (2000).
11. Kamal Masood Adhami, Syed Waseemuddin Ahmad, Khan Usmanghani, **Drug Analysis on HPLC**, Department of Pharmacognosy, University of Karachi, Karachi, Pakistan, pp271 (1999).
12. Iqbal Azhar, Syed Waseemuddin Ahmad, K Usmanghani, **Tannins: Their Chemistry and Bioactivity**, Department Pharmacognosy, University of Karachi, Karachi, Pakistan, and Zayed Complex for Herbal Research and Traditional Medicine, Ministry of Health, Abu Dhabi, UAE, pp151 (1997).
13. K.Usmanghani, **Researches on Materia Medica**, Department of Pharmacognosy, University of Karachi, pp775 (1997).
14. K.Usmanghani, Aftab Saeed, Tanweer Alam, **Indusyunic Medicine**, Department of Pharmacognosy, University of Karachi, pp601 (1997).
15. K.Usmanghani, Simin Shameel, **Index of Herb Drugs of Pakistan**, Department of Pharmacognosy, University of Karachi, Karachi, pp304 (1996).
16. K.Usmanghani, **Biologically Active Alkaloids and Glycosides**, Hamdard Foundation, Pakistan, Karachi, pp155 (1989).
17. K.Usmanghani, W Miki, G Honda, **Herbal Drugs and Herbalist in Pakistan**, Tokyo University of Foreign Studies, Tokyo, Japan, pp281 (1986).
18. K.Usmanghani, **Topics in Pharmacognosy**, University Grants Commission Monograph Series, Islamabad, pp74 (1985).

BIOINFORMATICS (THEORY)

Introduction and overview of Bioinformatics, Organization and structure of Genomes, Subdividing the genome, Physical Map of genome, Multiple sequence alignment: gene and protein facilities.

Neuroinformatics in biology, application of genome analysis and genomics.

Introduction to principle of gene therapy and gene delivery system.

Computer programming for bioinformatics Software development for bioinformatics, Micro-array development, Molecular programming, Object, Oriented, Programming, Medical records, Clinical Database and Database models, Medical Imaging and Digital imaging, Data acquisition, Patient machine interface, Networks, Data-exchange, Automated Diagnostic systems.

BIOINFORMATICS (PRACTICAL)

Basic principle of computing in bioinformatics, Web retrieving for genomic and proteomic data, Basic molecular techniques.

RECOMMENDED BOOKS

1. Teesa Attwood, David Parry-Smith, **Introduction to Bioinformatics** (2001).
2. D Andreas, Baxevanis and B F Francis Ouellette (Eds), **Bioinformatics: A Practical Guide to the Analysis of Gene and Proteins**, Second edition, (2000).
3. Stuart M Brown, **Bioinformatics: A Biologist's Guide to Biocomputing and the Internet**.
4. A. Malcolm Campbell, Laurie J Heyer, **Discovering Genomics, Proteomics and Bioinformatics**.
5. Jean-Michel Claverie and Cedric Notredame, **Bioinformatics for Dummies**.

BEMS THIRD PROFESSIONAL

PHARMACY (THEORY)

1. **Introduction:** Introduction to pharmacy and phyto-pharmaceutical manufacturing. The duties of herbalists and hygiene of manufacturing area. Weights and measures, states of matter and changes of states such as sublimation, critical points, superficial fluid etc, pH and other general topics in pharmaceutical practice.
2. **Introduction to Pharmaceutical Preparation and Dosage Forms:** Solutions, Emulsions, suspension and extract, parenteral preparations, ophthalmic preparations, medicated applications (ointments and suppositories), Powders (sieving and bulk powders), Oral dosage forms, unani medicaments, aerosols.
3. **Technology for Processing of Medicinal Plants:** Introduction, Drying of natural drugs, precautions, sieving, traditional method of grinding etc., Drug grinding, drug extraction, extract concentration, purification of extract, Formulation of plant extract, dosage forms, and steam distillation of volatile oil and expression of fixed oil. Preparation and identity of different concentrated qawami drugs, methods of Mudabbir (attenuation), tasfiya (clarification),
4. **Analysis of Medicinal:** Specialized analytical methods and equipments, instrumental methods of analysis, spectrometric method, X-rays diffraction, ultraviolet and visible absorption spectrometry, infra-red, nuclear magnetic resonance and mass spectrometry.
5. **Quality Control and Quality Assurance of Plant Extract:** Quality control and quality assurance and standardization of natural medicine of herbal, animal and mineral origin.
6. **Biotechnology:** Background, biotechnology of drugs, pharmacognostical, pharmacological and pharmaceutical manufacturing application.
7. **Elementology:** Introduction to elementology and study on KUSHTA of non-toxic nature.
8. **Physicochemical Processes:** Precipitation: Process of precipitation and its applications in Pharmacy, Crystallization: Types of crystals, Mechanism and methods of crystallization and its applications in Pharmacy, Distillation. Simple, fractional, steam distillation, vacuum distillation, destructive distillation

and their applications in Pharmacy, Miscellaneous Processes: Efflorescence, deliquescence, lyophilization, elutriation, exsiccation, ignition, sublimation, fusion, calcinations, adsorption, decantation, evaporation, vaporization, centrifugation, desiccation, levigation and trituration.

9. **Degradation:** Physical Factors: Influence of pH, temperature, ionic strength, acid-base catalysis, U.V. light, Chemical Factors: Complex chemical reactions. Oxidation-reduction, hydrolysis

PHARMACY (PRACTICAL)

Preparations of Different Unani Dosage Forms

1. Haboob (pills) and Aqrass (tablets), methods with devices for their formulation.
2. Modern methods of the preparation for Aussara and Satt. Definition of Rub, methods of obtaining rub from plants and fruits. Methods of conversion of thin fluid "Aussara" into thick, dry "Aussara and Rub"
3. Method of preparation of Khisanda (infusion) and Joshanda (Decoction)
4. Method of preparation of "Luabb and Sheera"
5. Methods of obtaining Fats (Roaghnyat)
6. Method of formation of Qayrooti and Ointment.
7. Roasting and correction method
8. Muddabir (Attenuation), Tasia (Clarification), Tasveel (Filtration) and Ghusal (Bath)
9. Aarq (Distillation)

Preparation of Different Dosage form Design of Modern Phytopharmaceuticals

NOTE: Visit to Pharmaceutical and Phytoceutical units.

RECOMMENDED BOOKS

1. Hakim Muhammad Kabiruddin, **Biyaz-e-Kabir** Vol III (Pharmacy), Sheikh Muhammad Bashir and Sons, Lahore, (1998).
2. Hakim Khawaua Rizwan Ahmed, **Dehli Ke Sahee Murakkabat**, Sheikh Muhammad Bashir and Sons, Lahore, (1998).
3. Pharmaceutical Advisory Council. **Qarabadeen-e-Hamdard**, Hamdard Foundation Pakistan, Karachi, (1982).
4. Remington, **The Science and Practice of Pharmacy**, (Ed: Alfonso R Gennaro, Mack Printing Co, Easton, Pennsylvania, 19th Edition, (1995).
5. ROB Wijesekera, **The Medicinal Plant Industry**, CRC Press, Boca Ration, (1991).
6. L Lachman, H A Leiberman, J L Kanig, **The Theory and Practice of Industrial Pharmacy**, Lea and Febiger, Philadelphia, (1986).

7. Khan Usmanghani, **Herbal Medicine Industry in Pakistan**, Research Institute of Indusynic Medicine, Karachi, (2000).
8. **Pharmaceutical Practice**, (Eds. D M Collet, M E Aulton) Longman Singapore Publisher, Singapore, (1991).

MICROBIOLOGY AND PARASITOLOGY (THEORY)

1. **Historical Status and Evolution of Microbiology and Parasitology**
2. **Scope of Microbiology with Special Reference to the Scientific Concepts of Eastern System of Medicine**
3. **Terminology (Descriptive)**
4. **Nomenclature and Classification of Micro-Organisms**
5. **Organisms: *The Virology***; General characteristics of virus, Classification of viruses and detail of at least one species from every group, DNA and RNA viruses, Main viruses, their pathogenecity, transmission and diseases, Bacteriophages, Diagnostic Techniques, Immunization for viral diseases, Acquired Immune deficiency Syndrome. ***General Bacteriology***; Historical Background, General and Cellular Morphology, Structures and Functions, Nutritional requirements of Bacteria and nutrition factors affecting growth, Growth of Bacteria and Normal flora, Growth curve, Growth factors and Growth characteristics, Pathogenesis and spread of Bacteria, Classification of Bacteria, Culture media, Bacterial cultures and staining methods. ***Special Bacteriology***; Gram+ve Cocci, Stepto Cocci, Pneumo Cocci, Staphlo Cocci, Gram-ve Cocci, Neisseiriaceae, Meningo Cocci, Gono Cocci, Gram-ve Bacilli, E.coli, Salmonella, Shigella, Vibrio cholera, Pseudomonas, Helicobacter Pylori, Gram+ve. The Spore forming Bacilli, Clostridium tetani, Gas Gangrene Clostridia, Perfringes, Defficile botulinum, Brucella (Plague), Bordetella pertussis, Haemophilus influenza, Corynebacterium, diphtheria, Mycobacterium tuberculosis, Treponema (Spirochetes), Rickettsiae

Note: An introduction of important diseases caused by these micro-organisms.

6. **The Fungi**: Properties of Fungi, Classification of Fungi and their name pathogenic potentials and superficial Mycosis, Systematic fungi, Actinomyces, Candidiasis, Aspergillosis, Diagnostic Techniques in Mycology
7. **Parasitology**: The Normal Flora, Micbiology of Air, Water and Soil, Historical Introduction, ***Protozoology, Helminthology and Occasional Entomology***: with special typical medicine, stressing on Morphology. Life Cycle Pathogenicity, Laboratory Diagnosis and Prognosis with therapy, Classification, Entamoeba

histolitica, Giardia lamblia, Trichomonas vaginalis, Leishmania kalazar, Malaria, **Helminthology**; Cestodes, Tania saginata, Diphylobothrium latum, Echino coccus. Granulosus, Nematodes, Trichuris tricur, Ascaris lumbricoides, Enterobius vermicularis, Encylostoma duodenale, Wuchereria bancroftis (Filaria).

8. **Immunology**: Introduction of Immunity and hyper sensitivity, Antigen, Antibodies, Immunoglobulin, Antigen and Antibody Re-action and their clinical and diagnostic applications, The complement system, Structure and function of Immune System (β cell and T Cell development), Major Histocompatibility Complex and transplantation.
9. **Sterilization and Disinfections**: Sterilization and Disinfections
10. **Fermentation**: Introduction to fermentation and important products produced by the fermentation.
11. **Biotechnology**: Background of recombinant technology and applications in this field.

MICROBIOLOGY AND PARASITOLOGY (PRACTICAL)

1. Study of Microscope and use of oil Immersion Lenses
2. Sterilization of Glass ware and products by various methods.
3. **Staining**: Simple staining, Gram staining, Acid fast staining, Capsule and spore staining, Geimasas staining — flagella staining.
4. **Culture Media**: Preparation of General Media, Preparation of Selective Media, Culturings of Micro-organisms.
5. Total viable counts of Micro-organisms, Morphological and selective Bio-chemical characterization of some specimen.
6. Microbiological analysis of Air, Water and soil.
7. Biochemical reactions. Inoculation and sensitivity.
8. **Tests of different bacterias**: Stephlo Cocci, Strepto Cocci, Pneumo Cocci, Gono Cocci, Gram -ve and Gram +ve Bacilli, Acid Fast Bacilli (Mycobacterium Tuberculosis)
9. Tests of Parasites and Helminthes

Note:- Students shall maintain their practical note-books with diagrams and necessary entries in accordance with the guidance of relevant subject teacher and shall certified by him.

RECOMMENDED BOOKS

1. Kumar Cotran Robins, **Basic Pathology**, 6th edition, W B Saunders Company, Philadelphia (1996).
2. Walters and Israel, **General Pathology**, Churchill Livingstone, London (1998).
3. Peter S. Macfarlane, Robin Reid, Robin Collander, **Pathology Illustrated**, Churchill Livingstone, London (1998).
4. Jawetiz, **Medical Microbiology and Immunology**, 5th edition, Churchill Livingstone, London (1998).

COMMUNITY MEDICINE (THEORY)

1. **Introduction and Basic Concepts:** Definition, Community Medicine, preventive medicine, social medicine, social hygiene, public health, scope and applications of community medicine, health and illness, history of origin of illness, levels of application of preventive medicine, level of prevention of disease.
2. **Primary Health Care:** Concepts of primary health care (PHC), primary health care in Pakistan, Government and NGO's role in PHC, planning of PHC system.
3. **Infection And Disinfections:** Infection, Incubation Period, infective Period, Carrier, Spread, channels, transmission, control of infection, quarantine, disinfections.
4. **Communicable Diseases:** Malaria, Cholera, Typhoid, Amoebic and Bacillary Dysentery, Giardiasis, Poliomyelitis, Hepatitis (A, B, C), Chicken Pox, Measles, Diphtheria, Tuberculosis, Leprosy, Tetanus, Influenza, Mumps, Plague, Rubella, Scabies, AIDS and Sexually Transmitted Diseases.
5. **Occupational Health:** History of Occupation and Health, Relationship between Occupation and Health, Common Occupational Diseases, Occupational Disease Prevention.
6. **Epidemiology:** History and concepts of Epidemiology, Uses, Basic measurements in epidemiology (Morbidity, Mortality, Disability and Fatality), Distribution, Determinants, Incidence and Prevalence Rate.

7. **Family Health:** Social obstetrics, Maternal Mortality, Infant Mortality, Breast Feeding, Problem associated with Artificial Feeding, Family Planning, Conventional Contraception, Surgical methods, Subcutaneous Method.
8. **Environment and Health:** Effects of environmental degradation, global warming.
9. **Air and Ventilation:** Composition of air, vitiation of air, health hazards due to air pollution, ventilation.
10. **Water Supply:** Distribution of water and water scarcity, classification of water, rain water, surface water, ground water, purification of water, water borne diseases.
11. **Disposal of Wastes:** Housing and street refuse, scavenging, controlled tipping, incineration, disposal of human excreta, treatment of waste material
12. **Housing and Health:** Healthy house, problem associated with poor housing

VISITS

1. MCH/Reproductive Health Centre
2. Primary school to assess the nutritional status of school children. Physical/mental/social rehabilitation center (e.g. Leprosy center, Karachi).
3. Ojha Institute of Chest Diseases, Karachi
4. Community Water Supply
5. NGO (Non-Governmental Organization)

RECOMMENDED BOOKS

1. Mohammad Ilyas, **Community Medicine and Public Health**, Time Traders, Karachi.
2. Karen A Savcier, **Perspective in Family and Community Medicine**, Mosby Year Book, London (1991).
3. Charles H Hennekens, **Epidemiology in Medicine**, Little Brown and Company (1987).
4. Hakim Ikral Ali Qureshi, **Qanoon-e-Sehat**, Text Books Board, Karachi (1996).
5. Muhammad Usman Khan, **Mubadi-I-Sehat**, Hamdard Academy, Karachi.

MATERIA MEDICA-I (THEORY)

1. **Historical status and evolution of medicine.**
2. **Terminologies.**
3. **Medicinal Botanices.**
4. **Definition of plants.**
5. **Types of plants according to size and shape:** Herbs, Shrubs, Trees.
6. **Types according to their properties:** Non toxic, Semi-toxic, Toxic.
7. **Explanation of Drugs:** Name of drug, Famous name, Occurrence, Botanical name, Structure, Chemical composition, Temperament, Properties, Crude drugs, Medicinal uses, Toxic effects, After effects, Tenedium, Corrigent, Effective period, Dose.
8. **Systemic Action of Drugs:** Study of selected herbal drugs or bioactive natural products affecting the different system of the body for curative and preventive actions.
9. **Drugs Acting on Autonomic Nervous System:** Ephedra sinica (soma kalpa), Areca catechu (supari), Drugs Acting on Cardiovascular System.

MATERIA MEDICA-I (PRACTICAL)

1. Introduction to Pharmaceutical dosage form i.e. Tablets, Capsules, Powder etc.
2. To study the clinical trials in which pre-clinical as well as clinical tests are discussed.
3. To study and demonstrate different drug delivery systems e.g. Oral, Parenteral, Rectal, Topical, Inhalation etc.
4. Introduction to Autonomic Nervous system and discussion on the emergency clinical case.
5. To study Biostatistical methods and related terminologies.
6. To record the pulse rate of a group of students before and after exercise by using statistical methods.
7. To study and demonstrate the effect of drugs on blood pressure of human being by using statistical methods.
8. To study and discuss the clinical conditions related to congestive heart failure and hypertension.
9. To study and demonstrate the effects of herbal drugs on diabetes induced subjects.

Note: Visit to Pharmaceutical Industry will be an integral part of the syllabus

RECOMMENDED BOOKS

1. V E Tyler, Lyn R Brody, James E Robess, **Pharmacognosy and Biotechnology** Lea and Febiger, Philadelphia (1991).
2. Betram G Kutzing, **Basic and Clinical Pharmacology**, Prentice Hall, International Inc, Newyourk (1989).
3. Goodman and Gillman, **The Pharmacological Basis of Therapeutics**, Maxwell MacMillan, London (1991).
4. Bowman, W C, Rand, M **Text Book of Pharmacology**, Blackwell, London (1986).
5. Clarke Brater Johnson, G V, **Goths Medical Pharmacology**, Mobsy Company, London (1988).
6. Hson-Mou CHANG, Paul Pui Hay BUT, **Pharmacology and Application of Chinese Materia Medica**, Vol I and II, World Scientific Publishing Corporation (1983).

PHARMACOGNOSY-II (THEORY)

1. **Separation and Isolation of Plant Constituents:** An introduction and basic principle of *chromatography and chromatographic techniques*; Column chromatography, Paper chromatography, Thin Layer chromatography, Gas chromatography, High Performance Liquid chromatography, Electrophoresis, Ion Exchange chromatography, Droplet Counter Current chromatography.
2. **Carbohydrates:** Introduction, Sucrose and Sucrose containing drugs, Sucrose, Dextrose, Liquid glucose, Fructose, Lactose, Xylose, Caramel, Honey, Starch, Inulin, Dextrin, Cellulose and Cellulose Derivatives, Purified cotton, Powdered cellulose, Microcrystalline cellulose, Methylcellulose, Sodium Carboxymethylcellulose, Gums and Mucilages, Tragacanth, Acacia, Sodium Alginate, Agar, Pectin.
3. **Glycosides:** Introduction, classification, chemistry and medicinal uses of, *Cardioactive glycosides*; Digitalis, Strophanthus and white squill, *Anthroquinone glycosides*; Cascara, Aloe, Rhubarb, Cochineal and Senna, *Saponin glycosides*; Glycyrrhiza, Sarsaparilla, *Cyanophore glycosides*; Wild cherry, *Isothiocyanate glycosides*; Black Mustard, *Lactone glycosides*; Cantharide, *Aldehyde glycosides*; Vanilla, *Miscellaneous glycosides*; Gentian, Quassia, Dioscorea.
4. **Tannins:** Introduction, classification, properties and chemical identity tests, Detailed study of Hamamelis, Catechu, Nut Galls.

5. **Volatile Oils (Essential Oils):** Introduction, significance, methods of obtaining volatile oils, chemistry and classification, Hydrocarbon volatile oils, Cubb, Turpentine oil, Alcoholic volatile oils, Peppermint, Coriander and Cardamom, Aldehydic volatile oils, Bitter orange peel, Sweet orange peel, Lemon cinnamon and Bitter almond oil, Ketonic volatile oils, Camphor, Spearmint, caraway, Buchu, Phenolic volatile oils, Clove, Thyme, Phenolic ether volatile oils: Fennel, Anise, Myristica, Oxide volatile oils, Eucalyptus, Chenopodium, Ester volatile oils: Rosemary, Miscellaneous volatile oils, Allium, Anethum.
6. **Resins and Resin Combination:** Introduction, properties, difference between glycoresins, olecoresins, oleo-gum resins and balsams, Resins: Rosin, Cannabis, Glycoresins: Podophyllum, Jalap, Ipomoea, Colocynth, Oleoresins Turpentine, Capsicum, Ginger, Oleo-gum resins: Asafoetida, Myrrh, Balsams: Storax, Peruvian Balsam, Tolu Balsam, Benzoin.
7. **Alkaloids:** Introduction, Properties, classification, Function of alkaloids in plants, methods of extraction of identification tests, Pyridine, Piperidine Alkaloids, Areca nut, Lobelia, Tobacco, Tropane Alkaloids, Belladonna, Hyoscyamus, Stramonium, Quinoline Alkaloids, Cinchona, Isoquinoline Alkaloids, Ipecacuanha, Opium, Indole alkaloids, Rauwolfia, Catharanthus, Nuxvomica, Physostigma, Ergot, Imidazole alkaloids, Pilocarpus, Steroidal alkaloids, Veratrum, Alkaloidal amines, Ephedra.
8. **Lipids:** Introduction, Detailed study of Fixed Oils, Castor oil, cotton seed oil, olive oil peanut oil, sun flower oil, corn oil, coconut oil, Almond oil, Linseed oil, Mustard oil, Sesame oil and soybean oil, Fats and Related Compounds: Theobroma oil and Lenolin, Waxes, Bees wax, Carnauba wax, Spermaceti, Jojoba oil.

PHARMACOGNOSY-II (PRACTICAL)

1. Extraction of the active constituents of crude drugs and chemical tests for their identification.
2. Isolation and separation of active constituents of crude drugs by paper and thin layer chromatography and column chromatography.

RECOMMENDED BOOKS

1. V E Tyler, L R Brady and J E Robbers, **Pharmacognosy**, 9th Eds. Lea and Febiger, Philadelphia, (1988).
2. G E Trease and W C Evans, **Pharmacognosy**, W B Saunders, Philadelphia, Toronto, (2002).

3. H Wagner, Gustav Fischer Verlag, **Pharmazeutische Biologie**, Stuttgart, (German Language), (1982).
4. **WHO Monographs on Selected Medicinal Plants**, Vol-I, World Health Organization, and Geneva, (1999).
5. Betty P-Jackson, **Atlas of Microscopy of Medicinal Plants, Culinary Herbs and Spices**, CBS Publishers, New Delhi, (2000).
6. **PDR for Herbal Medicines**, Medical Economics Company, New Jersey, Second Edition (2000).
7. Hson-Mou CHANG, Paul Pui Hay BUT, **Pharmacology and Application of Chinese Materia Medica**, Vol I and II, World Scientific Publishing Co (1983).
8. Iqbal Ahmad, Khan Usmanghani, **Analysis of Medicinal Compounds and Plant Drugs**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp165 (2003).
9. Iqbal Azhar, Khan Usmanghani, **Essential Oils**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp324 (2002).
10. K Usmanghani, **Herbal Medicine Industry in Pakistan**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp225 (2000).
11. Kamal Masood Adhami, Syed Waseemuddin Ahmad, Khan Usmanghani, **Drug Analysis on HPLC**, Department of Pharmacognosy, University of Karachi, Karachi, Pakistan, pp271 (1999).
12. Iqbal Azhar, Syed Waseemuddin Ahmad, K.Usmanghani, **Tannins: Their Chemistry and Bioactivity**, Department Pharmacognosy, University of Karachi, Karachi, Pakistan, and Zayed Complex for Herbal Research and Traditional Medicine, Ministry of Health, Abu Dhabi, UAE, pp151 (1997).
13. K Usmanghani, **Researches on Materia Medica**, Department of Pharmacognosy, University of Karachi, pp 775(1997).
14. K Usmanghani, Aftab Saeed, Tanweer Alam, **Indusyunic Medicine**, Department of Pharmacognosy, University of Karachi, pp601 (1997).
15. K Usmanghani, Simin Shameel, **Index of Herb Drugs of Pakistan**, Department of Pharmacognosy, University of Karachi, Karachi, pp304 (1996).
16. K Usmanghani, **Biologically Active Alkaloids and Glycosides**, Hamdard Foundation, Pakistan, Karachi, pp155 (1989).
17. K Usmanghani, W Miki, G Honda, **Herbal Drugs and Herbalist in Pakistan**, Tokyo University of Foreign Studies, Tokyo, Japan, pp281 (1986).
18. K Usmanghani, **Topics in Pharmacognosy**, University Grants Commission Monograph Series, Islamabad, pp74 (1985).

CLINICAL METHODS AND THERAPEUTICS-I (THEORY)

Following pattern of the exposition of medical knowledge would be followed from Unani and modern point of view. General introduction definition historical background epidemiology causes pathogenesis clinical features (signs and symptoms) diagnosis (investigation and specialized labs support) principles of medicine (management and dietary management) prognosis complications and preventions

1. **Abdominal Diseases:** Diseases of mouth and Oesophagitis, Stomatitis, Dysphagia, Carcinoma of esophagus.
2. **Diseases of Stomach:** Functional disorder of stomach, Flatulence, Anorexia, Hiccough, Vomiting, Nausea, Regurgitation, Haematemesis.
3. **Disease of Intestines:** Crohn's Disease, Irritable Bowl Syndrome, Sprue, Enteritis, Diarrhea, Dysentery, Cholera, Colic (Intestinal), Ileus (Paralytic), Constipation, Colitis, Appendicitis, Intestinal Tuberculosis, Intestinal Worms, Proctitis, Haemorrhoids, Anal Prolaps, Anal Fissure, Anal Fistula.
4. **Disease of Liver:** Hepatic Insufficiency, Hepatitis, Liver Abscess, Anemia, Dropsy (Ascites, Anasarca), Liver Cirrhosis, Cancer of Liver, Jaundice, Cholecystitis, Cholelithiasis.
5. **Disease of Pancreas:** Pancreatitis.
6. **Disease of Spleen:** Splenic diabetes disorder, Splenitis, Splenomegaly.
7. **Diseases of Urinary System:** Renal function disturbance, Renal insufficiency, Renal failure, Polycystic kidney, Nephritis, Nephrolithiasis, Renal colic, Cystitis, Vesical calculi, Strangury, Urinary incontinence, Urinary retention, Enuresis (nocturnal), Bed wetting, Haematuria, Urethritis.
8. **Urinogenital Disorders of Male:** Decreased libido, Premature ejaculation, Spermaturia, Nocturnal discharge, Hypersexuality, Impotency, Epididymitis.
9. **Sexually Transmitted Diseases:** Syphilis, Gonorrhoea, AIDS.

CLINICAL METHODS AND THERAPEUTICS-I (CLINICAL)

Clinical medicine consisting of detailed history taking with systemic examination involving nearly all systems of human body regarding of positive findings, differential diagnosis, laboratory and allied diagnostic investigations, final diagnosis, management, specialized referral highly specialized management, prognosis, complications, preventions and follow up.

RECOMMENDED BOOKS

1. Burhan Uddin Nafis, Translated Hakim Mohammad Kabiruddin, **Sharaha-e-Asbab**, Vol 4th, Shokat Book Depot, Gujrat (1984).
2. Burhan Uddin Nafis, Translated Khawaja Rizwan Ahmed, **Sharaha-e-Asbab** Darul Talifat, Karachi (1990).
3. Hakim Mohammad Ajmal Khan, **Hazique**, Shokat Book Depot, Gujrat (1990).
4. Hakim Muhammed Said, **Tajrubate Tabib**, Hamdard Foundation, Karachi (1990).
5. Hakim Abdul Hameed, **Marajal Baehrain**, Shaikh Gulam and Sons, Lahore Vol 1-3, (1185).
6. Hakim Muhammad Azam Khan, **Al-Akaseer** (Translated), Alshifa, Faisalabad (1990).
7. Hakim Ghulam Jilani, **Makhzanul Hikmat**, Tibbi Kutub Khana, Lahore (1985).
8. Hakin Muhammad Hassan Qarshi, **Jamaul Hikmat**, Makatb Mushir ul Attabba, Lahore (1986).
9. Bu Ali Seena, Translated Hakim Kabir Uddin, **Al-Qanoon**, Mallick Sons, Faisalabad (1991).
10. CRW Edward, and IAD Boucher, Eds, **Davidsons Practice of Medicine**, BPC Publisher, London (1990).

FORENSIC MEDICINE AND TOXICOLOGY (THEORY)

1. **Forensic Medicine:** Introduction, Forensic Medicine (Definition), Medical Jurisprudence, Legal prudence, Inquest, Courts, Procedure in court, Evidence and type of evidence, Dying declaration and dying deposition, Physician in the witness box.
2. **Personal Identification.**

3. **Death:** Definition — stages of death, Signs of death — cadaveric lividity, Rigor Mortis, Putrefaction, Saponification, Mummification, Cadaveric spasm, Types of death — Sycopic, Coma, Asphyxial — Hanging, Strangulation, Suffocation, Sudden death — causes, Violent death — Types — Accidental, Suicidal, Homicidal, Death due to starvation, Heat, Cold.
4. **Traumatology:** Mechanical injuries: the student should be able to describe mechanism of wound production, classification of wounds produced by conventional weapons and their medico legal aspect. Firearms, ammunition, classification, nomenclature, wound ballistics and medico legal aspects.
5. **Burn and Scald:** Definition — Various systems of classification, Types — Thermal, Chemical, and Electrical, Ante Mortem and Post Mortem burn, Causes of death.
6. **Law Related To Medical Man:** Medical Ethics — Privileges and Duties of Medical Practitioners, Physician — Patient relationship, Legal aspects of medical practice — consent, negligence.
7. **Forensic Sexology:** Student should be able to describe the approach to impotence, determination of virginity, pregnancy and criminal process during delivery, their medico legal aspects, examination procedures and reporting.
8. **Sexual Offences and Relevant Sections of Law:** Students should be able to differentiate between natural and unnatural sexual offence and know how to perform a medical examination of victim, collect specific specimen and write a required certification. Student should be able to list common sexual perversions and address their causes.
9. **Miscarriage:** Students should be able to determine the relevant section of law, medico legal aspects applicable to miscarriage, examine mother and aborted material and storage of aborted material in proper preservative for examination.
10. **Crime against newborn, infants and child:** Student should be able to identify infanticide and criminal and non-accidental violence or abuse to a newborn, infant or child.
11. **Forensic Psychiatry:** Students should be able to diagnose mental illness, Distinguish between true and feigned insanity, Advise on procedure of restraint of mentally ill, List limitation to civil and criminal responsibilities of mentally ill.

- 12. Examination of Biological Specimens:** Students should be able to describe the forensic importance of biological specimens (blood, semen, vomitus, saliva, breath, urine, hair). The method of their collection, preservation, dispatch and the common laboratory test performed.
- 13. Law Related to Medical Man:** Medical ethics — privileges and duties of medical practitioners, Physician-patient relationship, Legal aspects of medical practice, consent, negligence, Theory of DNA finger printing.
- 14. Toxicology: *General*;** Poison — Definition, Classification — Medico legal classification, Routes of Administration and Elimination of Poison, Factors modifying the effects/action of poison, Diagnosis and Treatment of poisoning, Poison and Crime. ***Special*;** Signs and Symptoms, Causes of death and Treatment of poisoning by following briefly, Corrosive Poisons, Mineral Acids — Sulphuric, Nitric and Hydrochloric Acids, Organic Acids — Oxalic, Carbolic and Salicylic Acids, Alkalis — Ammonia, Caustic soda and Potash, Irritant Poisons, Inorganic — Non-metallic poisons — Phosphorus, Metallic poisons — Arsenic, Antimony, Mercury, and Copper, Organic — Vegetable poisons — Caster Oil Seeds, Chitralal, Chitra, Madar, Animal Poisons — Snake poisons — Poisonous and Non Poisonous snakes, Signs and Symptoms of snake poisoning, Treatment — Poisonous Insects, Specific Poisons, Cerebral — Dhatura, Belladonna, Atropine, Cocaine, Alcohol, Chloroform, Ether, Chloral Hydrate, Opium, Barbiturate, Bhang, Spinal — Strychnine, Cardiac — Digitalis, Aconite, Others — Hydrocyanic Acid, Kerosene Oil, CO₂ Coal Gas.

RECOMMENDED BOOKS

1. C K Parikh, **Parikh's Text Books of Medical Jurisprudence and Toxicology**, CBS Publisher, New Dehli (1992).
2. Umar khan, **Forensic Medicine and Toxicology**, Azam Sons (1997).
3. N J Modi, **Modi's Text Book of Medical Jurisprudence and Toxicology**, A S Pandya (1994).
4. A Keith Mant, **Taylor's Principles and Practice of Medical Jurisprudence**, Churchill Livingstone, England (1984).
5. Hakim Rizwan Ahmed, **Tibb-e-Qanooni**, Darul Talifat, Karachi (1990).
6. Hakim Rizwan Ahmed, **Kitab-al-Sammom**, Darul Talifat, Karachi (1985).

PATHOLOGY (THEORY)

- 1. Introduction, Need, Importance and Division of Pathology.**
- 2. Terminology.**
- 3. General Pathology: *Cell Injury*;** Definition, Causes of cell Injury, Mech. of cell injury, Morphology of cell Injury, Intracellular accumulation, Cellular Adaptation of growth and differentiation, Atrophy, Hypertrophy, Hyperplasia, Metaplasia, Dysplasia, ***Acute and Chronic Inflammation***; Acute Inflammation, Vascular changes, Vascular Permeability, Changes in vascular flow and Caliber, Cellular Events, Chemical Mediators, Chronic Inflammation, Definition and cause, ***Repair***; Cell Growth, Regeneration, Wound healing, Pathological aspect of repair, ***Disorder of Fluid***; Vascular Flow and Shock, Edema, Hyperemia and Congestion, Haemorrhage, Thrombosis, Embolism, Infarction, Shock. ***Genetics and Diseases***; Marfan's Syndrome, Familial hypercholesterolemia, Cystic fibrosis, Gout, Down syndrome, Trisomy's syndrome, Klinefelter Syndrome, Turner syndrome, ***Disorder of Immune System***; SLE, RA, AIDS, ***Neoplasia***; Definition, Nomenclature, Characteristic of benign and malignant neoplasm, Differentiation and anaplasia, Rate of growth, Local Invasion, Metastasis, Spread of Tumor, Etiology of cancer — Carcinogenic Agent, Chemical Carcinogen, Radiation Carcinogen, Viral Carcinogen, Clinical features of neoplasm, Effects of tumor on host, Grading and Staging of Cancer, Laboratory diagnosis of Cancer, ***Environmental and Occupational disorders***; Smoking, Pneumoconiosis, Coal mine worker's disease, Silicosis, Asbestosis, Aspirin Abuse, Exogenous estrogen and oral Contraceptives, Acetaminophen, Lead, Carbon Monoxide, Alcohol and Ethanol, Heroin + Hashish, Thermal Burns, Hyperthermia, Electrical Injury, Injury by Ionizing agents or Radiation, ***Nutritional Disorders***; Kwashiorkor, Marasmus, Anorexia, Vitamin Deficiencies (A, D, E, K, Thiamine, Riboflavin, Niacin, Pyridoxine and Vitamin C), Zinc deficiency, Iron deficiency, Copper deficiency, Selenium deficiency, Obesity, Diet and Cancer.
- 4. Special Pathology: *Disease of Heart*;** Hypertension, Congestive Cardiac Failure (CCF), Right sided heart failure, Left sided heart failure, Ischemic Heart Disease, Angina Pectoris, Myocardial Infarction, ***Congenital heart disease***; VSD, ASD, PDA, Tetralogy of Fallot, Coarctation of aorta, Rheumatic fever and rheumatic heart disease, Infective Endocarditis, Myocarditis, ***Cardiomyopathy***; Dilated, Hypertrophic, Restrictive, ***Disease of Blood Vessel***;

Atherosclerosis, Raynauds disease, Varicose Vein, Phlebothrombosis and Thrombophlebits, Obstruction of Superior and Inferior Vena Cava (cause), ***Disease of Blood and Lymphoid System;*** Blood loss Anemia, Hemolytic Anemia, Hereditary spherocytosis, Sickle cell Anemia, GPD deficiency Anemia, Thalasemia, Erythroblastosis fetalis, Malaria, Iron deficiency anemia, Folate (folic acid) deficiency anemia, B₁₂ deficiency anemia or pernicious anemia, Aplastic anemia, Poly cythemia, Leucopenia, Lymphoma, Non-Hodgkin Lymphoma, Hodgkin lymphoma, Acute leukemia, Acute myeloid leukemia, Acute Lymphoblastic leukemia, Chronic leukemia, Chronic myeloid leukemia, Chronic lymphoblastic leukemia, Polycythemia vera (Brief), Thrombocytopenia (Brief), Idiopathic thrombocytopenic purpura, Thrombotic thrombocytopenic purpura, ***Respiratory System;*** Obstructive lung disease (cold), Asthma, Emphysema, Chronic Bronchitis, Bronchiectasis, Adult Respiratory Distress Syndrome, Pulmonary thromboembolism, Haemorrhage and Infarction, Acute Bacterial pneumonia, Primary atypical pneumonia, Tuberculosis, Primary TB, Secondary TB, Lung Abscess, Bronchogenic Carcinoma, Definitions of Pleural Effusion, Pleumitis Pleutitis, Pneumothorax, Hemothorax, Chylothorax, ***Oral Cavity;*** Developmental Anomalies, Infections, Bacterial and Fungal Infections, Viral Infection, Benign Tumors, Peripheral giant cell granuloma (Brief), Oral hairy leukoplakia (Brief), Leukoplakia, Squamous Cell Carcinoma (Brief), Dental Carries, Periodontal Disease, ***Gastro Intestinal Diseases;*** Esophagitis, Reflux Esophagitis, Gastritis, Acute and Chronic, Stress Ulcer, Peptic Ulcer, Duodenal, Gastric, Gastric Carcinoma (Brief), Inflammatory Bowel Disease, Crohn's disease, Ulcerative Colitis, Infective Enterocolitis (Only causes), Mal absorption syndrome, Disaccharide Deficiency, Tropical sprue, Celiac sprue, Appendicitis, Hemorrhoids, ***Liver and Biliary Tract;*** Jaundice (Causes and Normal physiology), Hyperbilirubinemia, Conjugated, Unconjugated, Viral Hepatitis, Hepatitis A, Hepatitis B, Hepatitis C, Hepatitis D, Hepatitis E, Cirrhosis, Causes, Main Complication, Types, Cirrhosis associated with alcohol abuse, Post-necrotic cirrhosis, Biliary Cirrhosis (Primary and Secondary), Pigment Cirrhosis (hemochromatosis), Cirrhosis associated with Wilson disease, Cirrhosis associated with antitrypsin deficiency, Carcinoma of Liver, Cholangitis and Liver abscess, Cholilithiasis, Acute and Chronic, ***Pancreas;*** Diabetes Mellitus, Acute and Chronic pancreatitis, ***Disease of Kidney;*** Nephrotic Syndrome, Nephritic Syndrome, Tubulo Interstitial Nephritis, Acute Pylonephritis, Acute drug induced interstitial nephritis, Chronic analgesic Nephritis, Acute tubular Necrosis, Hypertension due to kidney, Renal Stones, Renal Cell Carcinoma (Brief), Wilm's Tumor (Brief), Acute and Chronic Cystitis, Polycystic disease. ***Disease of Male Genital System;*** Epididymitis, Orchitis, Urethritis and Prostatitis, Benign Prostate Hyperplasia, Carcinoma of Prostate, sq. cell Ca. of penis (brief), ***Disease of Female Genital;*** Cervicitis, Endometritis, Dysfunctional

Uterine Bleeding, Endometrial Hyperplasia, Squamous Cell Carcinoma of Cervix, Leiomyoma, Salpingitis, Polycystic Ovary Syndrome, Carcinoma of Ovary (Causes + Types), Hydatidiform Mole, **Disease of the Breast**; Juvenile Hypertrophy, Acute Mastitis and Abscess, Fibrocystic Changes, Cancer of the Breast, **Disease of Endocrine System**; Pituitary Gland, Hypopituitarism, Hyperpituitarism, Hypothyroidism, Congenital hypothyroidism, Primary hypothyroidism, Hyperthyroidism, Simple and diffuse goiter, Multinodular goiter, Thyroiditis, Hashimoto's Thyroiditis, Sub-Acute thyroiditis, Chronic Thyroiditis, Adenoma, Carcinoma, Papillary, Follicular, Anaplastic, Primary hyperparathyroidism, Secondary hyperparathyroidism, Hypoparathyroidism, Cushing Syndrome, Hyperaldosteronism, Addison Disease.

PATHOLOGY AND HISTOPATHOLOGY (PRACTICAL)

Acute inflammation, Chronic inflammation, Chronic specific inflammation, Different types of Degeneration, Thrombosis, Embolism, Infarction, necrosis, Gangrene, Hyperplasia, Metaplasia, Pigmentation, Calcification, CVC, Papilloma, Adenoma, Chondroma, Fibroma, Leiomyoma, Neofibroma, Sq. Cell Carcinoma, Basal Cell Carcinoma, Transitional Cell Carcinoma, Adenocarcinoma, Fibrocarcinoma, Rhabdomyosarcoma, Leiomyosarcoma, Lymphosarcoma, Liposarcoma, Reticular Cell Sarcoma, Hodgkins disease, Breast Carcinoma, Osteogenic Sarcoma, Osteoclastoma, Urine complete Examination, stool Examination, Blood Complete Examination, Semen Examination, Cerebrospinal Fluid Examination, Pericardial fluid examination, Pleural Fluid Examination, Ascitic Fluid Examination, Blood Sugar, Blood Urea, Blood Cholesterol etc., Techniques of Clinical Blood Examination for various diseases, Gastric Analysis, Tests for liver function test, Renal function test, Tests for endocrine abnormalities, Biopsies and cytologic techniques.

RECOMMENDED BOOKS

1. Kumar Cotran Robins, **Basic Pathology**, 6th edition, W B Saunders Company, Philadelphia (1992).
2. Walters and Israel, **General Pathology**, Churchill Livingstone, London (1998).
3. Peter S Macfarlane, Robin Reid, Robin Collander, **Pathology Illustrated**, Churchill Livingstone, London (1998).
4. Jawetz, **Medical Microbiology and Immunology**, 5th edition, Churchill Livingstone, London (1998).

SURGERY-I (THEORY)

1. **Introduction of Surgery:** Basic surgical principles.
2. **Esophagus:** Diseases causing Esophageal obstruction, Congenital atresia of esophagus, Hiatus hernia and types of hiatus hernia.
3. **Duodenum and Stomach:** Hypertrophy pyloric stenosis of infants: Symptoms and treatment, Peptic Ulcer: Sign and symptoms and treatment from surgical point of view and management of perforated peptic ulcer, Haematemesis and Melena: Causes and management, Gastric Cancer: Causes, pathology, signs and symptoms, classification, investigation, diagnosis and management,
4. **Liver:** Trauma, Obstructive jaundice, Causes of enlargement of liver, Amoebic liver abscess: Pathology, course, sign, symptoms, and treatment, Hydated disease of the liver. Source of infection, pathology, sign, symptoms, treatment and complication, Tumor of liver: Benign and malignant.
5. **Spleen:** Rupture of spleen and its treatment, Causes of enlargement of spleen and indications for splenectomy and postoperative complications.
6. **Gall Bladder and Bile Ducts:** Investigation of the biliary tract in relation to diagnosis and management (Plain X-Rays, I/V Cholangiography, Ultrasonography Radioisotope scanning, Transheptic Cholangiography, Peroperative Cholangiography, Operative biliary endoscopy, Post operative Cholangiography, Gall stone (Cholelithiasis): Types, incidence and factors causing gall stone formation, complications of gall stone, acute obstructive cholecystitis, acute non obstructive cholecystitis, chronic cholectystitis, Stone in the bile ducts and management of biliary obstruction due to stone.
7. **Pancreas:** Acute, relapsing and Chronic Pancreatitis, Pancreatic masses including Neoplasia (Benign and Malignant), Carcinoma of Pancreas.
8. **Peritoneum:** Acute and chronic peritonitis: Causes, investigations, treatment, and complication, Tuberculous peritonitis.
9. **Small and Large Intestine:** Primary megacolon: Causes, sign, symptoms. Investigation and treatment, Ulcerative colitis: causes, sign, symptoms, investigations and treatment, Malignant cancer of colon.

10. **Intestinal Obstruction:** Acute intestinal obstruction: Dynamic and A dynamic, causes, sign. Symptoms, investigation and treatment, Paralytic ileus: Types, causes sign, symptoms and management.
11. **Vermiform Appendix:** Acute appendicitis and appendicular mass.
12. **Rectum:** Congenital Abnormalities: Imperforate anus, Proctitis, Cancer of rectum: Causes, classification, sign, symptoms investigations and treatment.
13. **Anus and Anal Canal:** Pilonidal Sinus, Anal fissure, Haemorrhoids, Fistula, Anorectal Abscess.
14. **Hernia Complete:** Inguinal hernia, Femoral hernia, Umbilical hernia and Para umbilical hernia, Incisional hernia.

SURGERY-I (CLINICAL)

Introduction

1. Introduction of surgery, case taking and examination of patients
2. Complete information about surgical instruments, sterilization
3. Preoperative and post operative management of patients
4. Anesthetic drugs their uses advantages and disadvantages
5. Preoperative preparation of surgeon
6. Complete information about towels and linens etc.
7. Suture material methods of stitching incision and their uses

Systemic Examination

1. Examination of swelling or a tumor
2. Examination of an ulcer
3. Examination of sinus or fistula
4. Examination of thyroid glands
5. Examination of the breast acute abdomen abdominal lump rectum anal canal and inguino-scrotal swelling

RECOMMENDED BOOKS

1. Bailey and Love's, **Short Practice of Surgery**, 22nd Edition, Chapman and Hall Medical, London (1995).
2. K.Das, **Handbook of operative Surgery**, 6th Edition, Dr S Das, Calcutta (1984).
3. Schwartz, S Spencer, **Principle of Surgery**, 5th Edition, Monotype Composition Co, Yale (1989).

4. Richard M Stillman, **General Surgery**, 3rd Edition, Prentice Hall International Inc, New Jersey (1988).
5. Altaf Hussain Rathore, **Short Text Book of Surgery**, Vol. I and II, 1st Edition, Ilmi Kitab Khana, Lahore (1982).
6. Bruce E Jarrell and R Anthony Carabasi, **NMS–Surgery**, 2nd Edition, Harward Publishing Co, Pennsylvania (1991).
7. Peter C Amandro, **Year Book of hand Surgery**, Mosby, New York, (1995).
8. Minhajuddin Shaikh **Differential Diagnosis in Medicine and Surgery**, D K Book Stall, Karachi.
9. John L Wilson, **Handbook of Surgery**, 5th Edition, Lange Medical Publication, California, (1973).
- 10.K Das, **Clinical Methods in Surgery**, 12th Edition, Prince Book Depot, Lahore (1984).
- 11.Hamilton Bailey’s, **Demonstration of physical signs in Clinical Surgery**, 15th Edition, John Wright and Sons Ltd, Birmingham (1973).
- 12.Anis Ismail, **Jarahat-e-Amliah Sagheera**, 1st Edition, Ajmal Khan Tibbia College, Aligarh (1995).
- 13.Tafseer Ali and Anees Ismail, **Ilmul Jarahat in the Light of History**, 1st Edition, Ajmal Khan Tibbia College, Muslim University, Aligarh (1996).
- 14.M Kabeeruddin, **Ilmul Jarahat**, Vol 1, 2, 3, 4, 5, 6, Mehboob-ul-Matabae Burqi Press, Delhi (1930).
- 15.Nazir Ahmed Majid, **General Surgery**, Vol 1, Mehran Book Depot, Hyderabad (1965).
- 16.Abul Qasim Qalaf, **Al-Tasreef**, Nami Press, Lahore (1973).
- 17.Muhammad Abdul Qavi Luqman, **Jarahat-e-Sagheera**, Awan publication, Lahore (1961).
- 18.Muhammad Abdul Haleem Lakhnavi, **Rehber Surgery**, 1st Edition, Islami Burqi Press, Lucknow (1940).

CLINICAL PSYCHOLOGY AND PSYCHIATRY (THEORY)

Psychology

Introduction, Definition — Psychology as behavioral science — scope, Roots of modern Psychology, Methods in Psychology.

1. **Growth and Development:** Infancy and childhood — stages of cognitive, moral reasoning development, Erickson’s Psycho-social developmental stages, and Personality development in early childhood — changes during adolescent to adult years.

2. **Motivation and Emotion:** Basic motives — Biological and Psychological, Instinctual behaviour --- Theories about it, Emotional development — Infancy to adult years — Determinants of emotional behaviours.
3. **Personality:** Definition — Characteristics of Personality — Theories about personality, Assessment of Personality.
4. **Consciousness, Sleep And Dreams:** Stages of consciousness — Psychoanalytic aspect, Sleep — patterns, Dreams — significance.
5. **Learning and Memory:** Classical conditioning, operant conditioning, other types of learning, Short term memory — long term memory.
6. **Stress:** Definition — types, Reaction to stress — Psychological/Physiological.
7. **Intelligence:** Definition — Intelligence assessment test.

Psychiatry

1. **Classification of Psychiatric Disorder (Brief Review).**
2. **Psychiatric Treatment Modulates, With Objectives.**
3. **Psychiatric Disorders (Symptoms, Etiology: *Neurotic disorders*;** Generalized Anxiety disorder, Phobia, Hysteria, ***Mood disorders*;** Depression, Mania, ***Psychotic disorders*;** Schizophrenia, ***Psychosomatic disorders*,** ***Organic disorders*;** Delirium, Dementia, Amnesic disorders, Epilepsy, ***Personality disorders*,** ***Mental retardation*;** ***Psychosexual disorders*;** ***Epilepsy*;** ***Drug Dependence*.**

CLINICAL PSYCHOLOGY AND PSYCHIATRY (PRACTICAL)

Clinical evaluation based orientation and viva voce of theory course for the practice of psychiatry. The outline of clinical application of Psychiatry will be based on the topics as follows:

1. **Classification of Psychiatric Illness.**
2. **Psychiatric Treatment Modules with Objectives.**

3. **Psychiatric Disorders:** Symptoms etiology and treatment, Generalized anxiety disorder, Phobia, Hysteria, Melancholia, Depression, Mania, Psychosomatic illness, Psychological aspect of cardio vascular disorders, gastro-intestinal disorders, Psychosexual disorders, Psychiatric aspect ,headache, dizziness, vertigo, Stress disorder, Neurasthenia, Organic disorder, Psychiatric disorders in child hood, Mental hygiene.

RECOMMENDED BOOKS

1. Ernest Hillguard, **Introduction to Psychology**, 12th Edition, Harcourt Brace College Publishers (1996).
2. Barbra Fadem, **BRS Behavioural Sciences**, CBS Press (1994).
3. Richard Gross, **Psychology, The Science of Mind and Behaviour**, 4th Edition Hodder and Stroughton (2001).
4. Richard Mayo, **Shorter Oxford Text Book of Psychiatry**, 4th Edition, Oxford University Press, London (2001).
5. James, H Scully, **NMS Psychiatry**, 3rd Edition, national Medical Series, Washington(1998).
6. M D Kaplan, **Synopsis of Psychiatry**, 7th Edition, William and Wilkins, Baltimore(1996).
7. Williams and Wilkins, **Behavioral Sciences**, Baltimore Publications, USA (1987).
8. M.Asgar, **Introduction to Psychiatry**, Printing Corporation of Pakistan Press, Islamabad (1981).
9. Donald W Goodwin, Samuel B Guze, **Psychiatric Diagnosis**, Oxford University Press, London (1996).
- 10.J Scottrutan, **Psychotherapy**, Gulford Press, New York (1992).

MATERIA MEDICA-II (THEORY)

1. **Systemic Action of Drugs:** Study of selected Unani drugs or bioactive natural products affecting the different systems of the body for curative and preventive actions.
2. **Digestive System:** Emetics, Antiemetics, Purgatives, Treatment of Peptic Ulcer e.g. Rheum palmatum (Revand chini), Aazaraqi, Jamalghota, Mulathi, Zanjabeel, Charaita, Taj, Jou, Turanj, Bakain, Supari, Podina.
3. **Central Nervous System:** Disorders of CNS, Sedative, Hypnotic, Antiepileptic drugs, General and local anesthetics, Skeletal muscles relaxant, Treatment for Parkinsonism, Antipsychotic agents, Opioid analgesics, Antagonists, Drug of

abuse, e.g. *Strychnos nuxvomica*, *Gentiana manshurica*, (*gantiana*), *Paeonia suffruticosa*, (types of ood saleeb), *Aconitum carmichalia* (types of bichnak), *Datura metal*, *Raulfia surpentina* (asrool) *Thevetia nerrifolia* (kaneer sufaid), *Ziziphus jojoba* (unab), *Asarem hetrotropoides* , *Bombyx mori* (abrashim).

4. **Hormones and Endocrine System:** Introductory aspect and knowledge of hypothalamic and pituitary hormones, side effects of thyroids and anti thyroid drugs, *Albizzia lebbek*, (sars), Adrenocorticosteroids, *Glycyrrhiza glabra*, and Adrenocortical antagonists, Gonadal hormones and inhibitors, *Rosa damanscena*, *Cyperus rotandus*, (*nagermotha*), pancreatic hormones and anti diabetic drugs, *Gymnema Sylvester* (*gurmar booty*), *Momordica charantia* (*karalla*), *Melia azadirachta*, (*neem*), *Hordeum vulgare* (*Joe*), agents that effect bones and minerals homeostasis, and osteoporosis, e.g. *Boerhavia repens* (*biskhapara*).
5. **Effects of Chemotherapeutic Drugs:** Introduction and knowledge of side effects of Antibiotics, Antimicrobial, *Barbers vulgaris*, (*rasot,darehald*), *Rheum Palmatum*, (*ravendchini*), *Crotontiglium* (*jamalgota*), *Euphorbia humours* (type of *thohar*), *Raphanus sativus* (*mooli*), *Ricinus communis* (*arand*), Antifungal, *Rheumpalmatum* (*ravandchini*), Antiviral, *Menthearvensis* (*podina*) Antiparasitic, Antiprotozoal, *Alliumsativum* (*lehsan*), Antihelminthecs, *Meliaazadirachta* (*mazoo*), *Arecacatechu* (*supari*) and Antineopalstic drugs; *Prunus armeniaca* (*khubani*), *Curcuma zedoaria* (*zaranbad*).
6. **Arthritic and Musculoskeletal Disorders:** Drugs used in gout, Non-steroidal anti inflammatory and Non-opioid analgesics, Muscle pains (*rubafacient* and *refrigerants*), Anti inflammatory; *Solanum nigrum* (*makoh*), *Zingiber officinalis* (*zanjabeel*), *Raphanus sativus* (*mooli*), *Asarum heterotropoides*, *Cyperus rotundus* (*nagar mootha*).
7. **Clinical Pharmacology:** Introduction, monitoring drug treatment; monitoring responses and plasma concentration, factors affecting drug responses; Pharmacokinetics and drug interactions, drug toxicity; preclinical and clinical evaluation of toxicity, adverse drug reactions and benefit risk ratio, pharmacodyanamics and drug disposition in pregnant women, neonates and children, teratogenesis.

MATERIA MEDICA-II (PRACTICAL)

1. Introduction and in detail study of *Ephedra vulgaris* (*som kalapna*).
2. To study and demonstrate herbal cardiotonics e.g. *Digitalis purpurea* (*digitalis*), *Terminalia arjuna* (*arjuna*).

3. To study and demonstrate the effect of drugs on rabbits eye.
4. To study and demonstrate the effect of drugs on Intestinal pieces of rabbits and guinea pigs.
5. To study and demonstrate the herbal laxatives e.g. *Aloe barbadensis (ailva)*, *Castor oil*, *Plantago ovata (Ispaghul)*, *Cassia senna (Senna maki)*.
6. To study and demonstrate the herbal antihypertensive agents e.g. *Rauwolfia serpentina (asrool)*.
7. To study and demonstrate the effect of drugs on Frogs heart by using Kymograph e.g. *Adrenaline*, *Acetylcholine*, *Atropine*.
8. To study and demonstrate the effect of drugs on Pat's blood pressure and ECG by using Oscillography (4-channel) e.g. *Adrenaline*, *Acetylcholine*, *Atropine* etc.
9. To study and demonstrate the herbal anti-rheumatics e.g. *Commiphora mukul (Guggal)*, *Colchicum autumnale (suranjan sheerin)*.
10. To study and demonstrate herbal: Antimalarials, Diuretics, Antitumour, Antidiabetics, Antitussives e.g. *Cinchona*, *Tribulus terrestris (gukhro)*, *Vinca*, *Pterocarpus santalinus (sandal lal)*, *Adhatoda vasica (adusa)*, *Ocimum sanctum (Tulsi)*.
11. To study and demonstrate herbal compound preparations e.g. *Dawa-ul-misk*, *Different khamira* etc.

Note: Visit to Pharmaceutical Industry will be an integral part of the syllabus

RECOMMENDED BOOKS

1. V E Tyler, Lyn R Brody, James E Robess, **Pharmacognosy and Biotechnology** Lea and Febiger, Philadelphia (1991).
2. Betram G Kutzing, **Basic and Clinical Pharmacology**, Prentice Hall, International Inc, New York (1989).
3. Goodman and Gillman, **The Pharmacological Basis of Therapeutics**, Maxwell MacMillan, London (1991).
4. Bowman, W C, Rand, M. **Text Book of Pharmacology**, Blackwell, London (1986).
5. Clarke Brater Johnson, G V, **Goths Medical Pharmacology**, Mobsy Company, London (1988).
6. Hson-Mou CHANG, Paul Pui Hay BUT, **Pharmacology and Application of Chinese Materia Medica**, Vol I and II, World Scientific Publishing cop (1983).

OBSTETRICS AND GYNAECOLOGY-I (THEORY)

Introduction, obstetrical history taking and examination conception implantation events and formation of zygote menstrual cycle and events of cycle including hormonal influence placenta structure functions development and abnormalities Amnion and liquor Amnii and its role Chorion Umbilical cord deciduas and its functions.

1. **Fetus:** Size, circulation, fetal diameter, fetal and obstetrical, examination, bony pelvic axis, pelvic abnormalities, fetal monitoring.
2. **Normal Pregnancy:** Clinical signs and symptoms of pregnancy, diagnosis of pregnancy, duration of pregnancy, hyper emesis gravidarum physiological maternal changes during pregnancy, antenatal care and fetal examination methods advice during pregnancy harmful drug effect of fetus parental diagnosis.
3. **Abnormal Pregnancy:** Early pregnancy loss and its management (abortion) pregnancy with fibroids ovarian cyst and prolapsed placental abnormalities umbilical cord abnormalities antepartum hemorrhage placental abruption type diagnosis management and treatment. Placenta praevia types diagnosis management and treatment polyhydramnios and oligohydramnios. hypertensive disorders during pregnancy Essential hypertension, pre eclampsia, Causes diagnosis prevention management and treatment .Eclampsia stages and management, renal diseases during pregnancy infections during pregnancy, pregnancy with jaundice pyrexia in pregnancy intrauterine fetal death, intrauterine growth retardation and its management prematurity post maturity, multiple gestation.
4. **Normal Labour:** Physiology of labour stages and onset of labour uterine contraction sign and symptoms of parturition conduction of normal delivery complete description and stages of labour management of 1st 2nd and 3rd stage of labour mechanism of labour analgesia during labour, oxytocic drugs.
5. **Abnormal Labour:** Prolong labour and its assessment; types of prolonged labour and management of fetal malpresentation, causes, types, mechanism, diagnosis, management and treatment. Occipito posterior position, deep transverse arrest, breech presentation, brow presentation, face presentation, shoulder presentation, cord prolapsed, unstable lie/transverse lie, compound presentation, cephalopelvic disproportion, obstructed labour and premature rupture of membrane Post partum hemorrhage its types causes clinical finding management and treatment post partum pituitary necrosis.

6. **Normal Puerperium:** Duration, management of puerium, lochia, postnatal checkup, baby examination, immediate care to baby, normal progress of new born, infant feeding, merits and demerits of breast feeding.
7. **Abnormal Puerperium:** Puerperal pyrexia genital tract infection urinary tract infection breast disorders in details homeostatic disorders.
8. **Obstetrical Procedures and Operations:** Introduction of labour types process and indication episiotomy forceps and vacuum extractor operation caesarean section (operatio delivery) indication procedure and management role of ultra sound in obstetrics vital statistics.
9. **Newborn and its Disorders:** Examination and care of newborn Asphyxia Neonatorum birth injuries. Icterus Neonatorum. Hemorrhagic disease evaluation of newborn resuscitation, low birth weight congenital malformation. RH incompatibility, thalasaemia major, thalasaemia minor, minor problems of new born, fetal congenital abnormalities.

OBSTETRICS AND GYNAECOLOGY-I (CLINICAL)

Students to examine out door indoor patients, take history and to get complete information about diagnosis and treatment, all the instruments issued in gynaecological examination should be recognized and their uses known, conduction of gynaecological test.

RECOMMENDED BOOKS

1. Ten teachers, **Text book of Obstetrics**, CBS Publishers, Britin (1998).
2. Bhattacharya **Text book of Obstetrics**, CBS Publishers, New Delhi (1996)
3. Michael de Swiet **Medical Disorder in Obstetrical Practice**, PG Publisher, Singapore (1986)
4. A.L. Mulaliar Menon **Clinical Obstetrics**, Orient Longman Ltd. (1990)
5. Professor Fazl-ur-Rehman **Fann-e-Viladat**, Manager Kutub Khana, Delhi (1936).
6. Dus Asataza **Fann-e-Viladat**, Mallick Sons Tajran Kutab, Faisalabad (1984).
7. Faseehuddin Chughtai **Ilmul Qabla**, Mallick Sons Tajran Kutub, Faisalabad (1984).

CLINICAL METHODS AND THERAPEUTICS-II (THEORY)

1. **Amraz-e-Amma (General Diseases).**
2. **Skin Diseases:** Discoloration of the skin, Leukoderma/vitiligo, Pityriasis Alba, Pityriasis nigra, Seborrhea and dandruff, Skin lacerations, Sun burn and ichthyosis, Cracks of skin, Urticaria, Nettle rash, Burn and scald, Scabies and purities, Prickly heat, Miliaria rubra, Acne, Warts, Eczema, Bromidrosis, Hyperhidrosis, Barber's itch/tinea sycosis, Onychotrophy, Paronychia, Basal cell carcinoma, Cellulites, Leprosy, Keloid.
3. **Inflammatory Diseases:** Definition of inflammation and principles of treatment, Simple inflammation, Inflammation due to infection, Chronic inflammation, Non pitting edema/swelling, Sanguinous swelling, Slough and gangrene, Erysipelas, Herpes, Edema (pitting), Bubos, Orchitis, Scrotal hernia, Hydrocoele, Varicose, Varicocele, Elephantiasis, Aneurysm, Tumour, Cystic swelling, Scrofula, Cancer.
4. **Pustular Lesions:** Carbuncle, Blister/bullae, Cancrum/phagedena, Abscess, Boil foruncle, Guinea worm disease, Endemic ulcer.
5. **Diseases of Musculoskeletal System:** Lumbago, Carpel tunnel syndromes, Sciatica, Cervicalneuralgia.
6. **Diseases of Scalp:** Alopecia/alopecia furfuracea, Ptilis, Baldness, Canities/holiness, Louse/pediculus, Addison's disease, Cushing disease, Goiter, Gynocomestia, Hyper parathyrodism, Male infertility, Diabetes mellitus.
7. **Pyrexial Conditions:** Pyrexia/fever, Types of pyrexia, Complication of pyrexia, Diurnal variation of temperature, Timing of temperature and its rates, Death in pyrexia or fevers, Hypothermia, Ephemeral fever or febricula, Tuberculosis or tuberculus fever or hectic fever, Fever of infections, Intermittent fever (malarial fever), Hyperpyrexia fever/esthenic fever, Typhoid fever, Epidemic fever, Small pox fever, Measles fever (rubbela), Chicken pox fever, Erysipelas, Crisis, Pyrexia or unknown origin (PUO).
8. **Blood Disorders:** Anaemia (liver disease), Leukemia, Lymphoma, Thalessemia

CLINICAL METHODS AND THERAPEUTICS-II (CLINICAL)

Clinical medicine consisting of detailed history taking with systemic examination involving nearly all systems of human body regarding of positive findings, differential diagnosis, laboratory and allied diagnostic investigations, final diagnosis, management, specialized referral highly specialized management, prognosis, complications, preventions and follow up.

RECOMMENDED BOOKS

1. Burhan Uddin Nafis, Hakim Mohammad Kabeeruddin (Translated), **Sharaha-e-Asbab**, Shokat Book Depot, Gujrat (1984).
2. Burhan Uddin Nafis, Khawaja Rizwan Ahmed (Translated), **Sharaha-e-Asbab** Darul Talifat, Karachi (1990).
3. Hakim Mohammad Ajmal Khan, **Haziq**, Shokat Book Depot, Gujrat (1990).
4. Hakim Mohammad Said, **Tajrubate Tabib**, Hamdard Foundation Pakistan, Karachi (1990).
5. Hakim Ghulam Jilani, **Makhzanul Hikmat**, Tibbi Kutub Khana, Lahore (1985).
6. Hakim Muhammad Hassan Qarshi, **Jamaul Hikmat**, Makatb Mushir ul Attabba, Lahore (1986).
7. Bu Ali Seena, Hakim Kabir Uddin (Translated), **Al-Qanoon**, Mallick Sons, Faisalabad (1991).
8. Davidsons Practice of Medicine, (CRW Edward, and I.A.D. Boucher, Eds.), BPC Publisher, London (1990).

PAEDIATRICS (THEORY)

1. **History Taking and Physical Examination.**
2. **Growth and Development.**
3. **Immunization.**
4. **Nutrition.**
5. **Protein Energy Malnutrition.**
6. **Neonatology:** Resuscitation of newborn, Prematurity, Low Birth weight, Jaundice in new born, Neonatal sepsis, Hypoglycemia, Hypocalcaemia, Neonatal Seizures, Haemorrhagic disease of Newborn, Tetanus neonatorum, Respiratory distress in the newborn period, Hyaline membrane disease (HMD), Intra cranial Hemorrhage, Infant of Diabetic mother (IDM), Maternal medication and Fetal Hazards.
7. **Infectious Diseases:** Diarrhea, Poliomyelitis, Diphtheria, Pertusis, Pulmonary T.B., Measles, Typhoid Fever, Hepatitis, Hepatic Failure, Rheumatic fever, Protozoal Infection, Pica, Fever of unknown origin.
8. **Respiratory System:** Foreign body inhalation, Bronchiolitis, Group, Acute Epiglottitis, Pneumonia, Bronchial Asthma, Respiratory distress, Pulmonary Tuberculosis, Pleural effusion, Cystic Fibrosis.
9. **CVS:** Congestive heart failure, Fetal Circulation, Cyanotic Heart Diseases, Tetralogy of Fallots, Transposition, Tricuspid Atresia, Pulmonary Atresia, Truncus Arteriosus, Total anomalous Pulmonary Venous Drainage, Cyanotic, Heart Diseases, VSD, ASD, PDA, Pulmonary Stenosis, Aortic Stenosis, Coarctation.
10. **CNS:** Epilepsy, Convulsions, Meningitis, Encephalitis, Coma, Mental Retardation, Cerebral Palsy, Guillian – Barre Syndrome, Febrile Fits.
11. **Hematology/Oncology:** Anemia, Thalassamia, Disorders of Platelets, G₆ PD deficiency, Leukemia, Hodgkin disease and lymphoma.

12. **Endocrine/Genetic/Metabolic:** Hypothyroidism, Diabetes mellitus, Rickets, Down's syndrome, Glycogen storage disease, Lipid storage disease.
13. **Nephrology:** Acute glomerulonephritis, Nephritic syndrome, Acute renal failure, Chronic renal failure, UTI.
14. **Common Skin Disorders in Children:** Vascular birth marks, Pyoderma, Viral infections, Parasitic infestations of skin, Ichthyosis, Lesions characterized by formation of bullae, Atrophic dermatitis, Acne.

PAEDIATRICS (CLINICAL)

Pediatrics medicines consisting of detailed history taken (Neonatal and Child examination), with systemic examinations involving nearly all systems of human body regarding positive findings, differential diagnosis, management, final diagnosis, follow-up (Resuscitation), minor medical surgical procedures), and specialized referral for highly specialized management.

RECOMMENDED BOOKS

1. S M Haneef, S Maqbool, Arif, **Pakistan Paediatric Medical Association**, International Book Bank, Lahore, (1997).
2. John Apley, **The Child with Abdominal Pain**, Black well Scientific Publications, London, (1978).
3. Wilford Sheldon, **Diseases of Infancy and Childhood**, J and A Churchill Ltd, London (1946).
4. David Rubin, M Caplen, **Paediatric Emergency Medicine**, Mosby Publication, USA (1994).
5. Holt Howland, **Holt's Disease of Infancy and Childhood**, Appleton-Century Crofts Inc, London (1994).
6. Saul Krugman, Katz Gershon, **Infectious Diseases of Children**, Mosby Publication, USA (1992).

OPHTHALMOLOGY AND ENT (THEORY)

EYE

1. **Diseases of the Eye: Lids;** Anatomy, Classification of lid disease, Blepharitis, Sty, Chalazion, Trichiasis, Entropion, Ectropion, Symblepharon, Ptosis, Tumours, Herpes Zoster. **Lacrimal Apparatus;** Anatomy, Composition circulation and function of tear film, Dry eye, Excessive watering (Epiphora) Dacryocystitis (acute and chronic), **Orbit;** Orbital cellulitis, Proptosis, Exophthalmos, Enophthalmos, Tumours, **Conjunctiva;** Anatomy, Classification of conjunctival disease, Conjunctivitis, (Viral, Bacterial and Allergic), Trachoma, Pinguecula, Pterygium, Ophthalmia neonatorum, **Cornea;** Anatomy, Classification of corneal diseases, Corneal ulcers, Keratoconus, Corneal opacities, D/D Keratoplasty, **Sclera;** Anatomy, Episcleritis, Scleritis, **Uveal Tract;** Anatomy, Classification of uveal tract disease, Uveitis, Panophthalmitis, D/D of red eye, **Lens;** Anatomy, Cataract, **Vitreous;** Anatomy, Blood in vitreous, synechiasis, **Glaucoma;** Physiology of aqueous formation and circulation, Maintenance of normal intraocular pressure, Glaucoma, **Retina;** Anatomy, Classification of retinal diseases, Retinal detachments, Diabetic retinopathy, Hypertensive retinopathy, Occlusion of retinal artery, Occlusion of retinal vein, Retinoblastoma, **Optic Nerve;** Papilloedema, Optic Neuritis, Optic atrophy, Acute Retrobulbar neuritis, Toxic amblyopia, Optic atrophy.
2. **Injuries:** Extraocular foreign bodies, Blunt injuries, Perforating injuries with intracocular foreign bodies, injury due to burns and chemicals.
3. **Squint:** Definition and Classification.
4. **Pupil:** Anatomy, Pupillary pathways, Significance of pupillary size and reaction in diseases.
5. **Ocular manifestation of Vitamin A, Deficiency, and its management.**
6. **Errors of refraction:** Optical system of normal eye, Myopia, Hypermetropia, Stigmatism, Presbyopia, Aphakia.

EAR

Diseases of the Ear: Applied anatomy and physiology, Symptoms, Signs and investigations of ear, Congenital disorders, Ear ache, Discharge from the ear, Otitis externa, Otitis media, Deafness sensor neural and conductive, Tinnitus, Vertigo, Facial palsy, Tumors of ear.

NOSE AND PARA-NASAL AIR SINUSES

Diseases of Nose: Applied anatomy and physiology, Congenital disorders, Symptoms, Signs, and investigations of Nasal and Sinus diseases, Nasal septal disorders, Nasal trauma, Epistaxis, Rhinitis, Nasal polyposis, Sinusitis, Head ache, Boil of the nose, Cavernous sinus thrombosis, Foreign body in the nose, Rhinolith and Peenosh, Vestibulitis.

MOUTH AND SALIVARY GLANDS

Diseases of Mouth: Applied anatomy and physiology, Congenital disorders, Dental caries and periodontal diseases, Stomatitis, Ulcers, Candidiasis, Oral manifestation of systemic disease, Premalignant conditions of oral mucosa, Leukoplakia, Erythroplakia, Cancer of oral cavity, Infection of salivary glands, Stone in the salivary glands, Tumor of salivary glands, Ranula.

THROAT

Diseases of Throat: Applied anatomy and physiology, Congenital abnormalities, Symptoms, Signs and investigation of throat diseases, Pharyngitis, Tonsillitis, Quinsy, Adenoiditis, Dysphagia, Dysphonea, Tumors of esophagus and pharynx, Laryngitis, Vocal nodule, Recurrent laryngeal nerve palsy, Vocal cord paralysis, Epiglottitis, Laryngeal tracheo bronchitis, Foreign body in the larynx, Thyroid disease, Snoring, Indication of tracheotomy and tracheotomy, Lump in the neck, Mediastinal tumors compressing larynx, Retropharyngeal abscess, Diphtheria.

OPHTHALMOLOGY AND ENT (CLINICAL)

- 1. Clinical, Practical Training and Examination of Eye:** History taking, Simple examination with torch, Visual acuity testing, Visual field testing, Regurgitation test, Measurement of intraocular pressure (digital, tonometry), Everson of upper eye lid, Dressing of corneal ulcer and post operative dressing, Identification of lenses and their uses, Identification of lenses and their uses, Theoretical principal of retinoscopy, Ophthalmoscopy practical ability of direct, theoretical principal of indirect, Use of slit lamp.
- 2. Clinical, Practical Training and Examination of ENT:** History taking, Examination of external ear, throat, sinuses and general examination, Use of otoscope and ear speculums, Use of tuning fork (webbers test, rinnes test and ABC test), Use of nasal speculum, Use of tongue depressor, Examination of

naso pharynx, Transillumination test for paranasal air sinuses, Indirect laryngoscopy, Introduction to instruments used in ENT examination and operation.

RECOMMENDED BOOKS

1. Stephen J H Miller, **Parsons Diseases of Eye**, Churchill Livingstone, London (1984).
2. Danial Vaughan and Taylor Asbury, **General Ophthalmology**, Lange Medical Publications, USA (1983).
3. Muhammad Aslam Naz, **Journal of Ophthalmology**, An Epoch Publications, UK (1990).
4. S Abdul Sadiq, **Ophthalmology**, Aly Computer Institute, Karachi (1990).
5. T H Kirmani, **Fundamental of Ophthalmology**, Elite Publisher Ltd., Karachi (1983).
6. I S Roy, **Hand Book of Ophthalmology**, CBS Publication, Delhi (1992).
7. Akhtar Hussain, **Amraz-e-Chashm**, Muzaffar Publications, Lahore (1968).
8. AGD Maran, **Logan and Turner Disease of ENT**, Oxford University Press, London (1994).
9. M Jalisi, **A Short Book of ENT**, Muhammad Hashim Azam Sons, Karachi (1970).
10. I Simpson Hall, Bernard H Colman, **Diseases of Nose, Throat and Ear**, Churchill Livingstone, London (1987).
11. Abdul Ghani and M Latif, **Text Book of ENT**, National Book Foundation, Lahore (1984).
12. Hk Kabir-ud-Din, **Sharah Asbab**, (Translated by Burhanuddin Nafees), Shokat Book Depot, Gujrat (1990).

OBSTETRICS AND GYNAECOLOGY-II (THEORY)

1. **Anatomy:** Introduction description of genital organs development of female genital organs.
2. **Physiology:** Puberty and adolescent menopause and menstrual cycle ovulation and its clinical importance development of secondary sexual characteristic. Diagnosis, History taking, past history, present complains and queries. Patient examination, position of examination, general examination, pelvic examination, examination of external genital organs, internal examination of genital organs (vagina, cervix) and investigation. Abdominal examination and diff diagnosis of pregnancy. Minor gynaecological operative procedures.

3. **Hormones:** Description of different hormones, hormone replacement therapy (HRT).
4. **Changes in menstrual cycle:** Menstrual abnormalities, amenorrhea, hypomenorrhoea, dysmenorrhoea, oligomenorrhoea, polymenorrhoea, dysfunctional uterine bleeding, postmenopausal bleeding.
5. **Vulval Diseases:** Inflammation (primary and secondary), pruritus vulval abscess tumors of vulva, vulvae lesions.
6. **Vaginal Diseases:** Leucorrhoea (viginal discharge) inflammation of vagina (gonorrheal tuberculosis and syphilitic and cystic) abscess of vagina tumor of vagina vesico-vaginal fistula and recto-vaginal fistula cystocoele rectocoele (genital proplapse) vaginismus.
7. **Diseases of Uterus:** Endometritis acute and the chronic erosion tumor of the uterus fibroids adenoma cancer.
8. **Diseases of Cervix:** Inflammation tumors.
9. **Diseases of Fallopian Tubes:** Salpingitis acute and chronic abscess of fallopian tube tumors of fallopian tube.
10. **Diseases of Ovaries:** Oophritis (acute and chronic) abscess tumors and cysts of ovaries.
11. **Diseases of Urethra:** Retention of urine cystitis (acute and chronic) stricture.
12. **Diseases of Mammary Glands:** Brief anatomy and physiology of mammary gland diseases of mammary gland.
13. **Sexually Transmitted Diseases:** Gonorrhoea syphilis tuberculosis, AIDS.
14. **Infertility:** Sites causes investigation diagnosis treatment.
15. **Ectopic Pregnancy:** Sites pathology differential diagnosis management treatment.
16. **Population Planning and Contraception:** Indication contraindication methods complications.

17. **Genital Tract Infection:** Infection of upper genital tract infections of lower genital tract genital tuberculosis.
18. **Displacement of Uterus:** Prolapsed retroversion inversion causes diagnosis management and treatment.
19. **Gestational Trophoblastic Diseases:** Hydated form mole trophoblastic tumors.
20. **Miscellaneous Gynecological Disorders:** Dysparunia dysmenorrhoea backache pelvic diseases hysteria leukoplakia pelvic floor injuries.
21. **Hirsutism and Intersexuality:** Problems of marriage and sex.
22. **Common Gynecological Operations and Instruments:** Preoperative preparations role of ultra sonography in gynecology.
23. **Post Operative Complications and Its Management.**

OBSTETRICS AND GYNAECOLOGY-II (CLINICAL)

Students to examine out door indoor patients, take history and to get complete information about diagnosis and treatment, all the instruments issued in gynecological examination should be recognized and their uses known, conduction of gynaecological test.

RECOMMENDED BOOKS

1. Rashid Latif, **Gynecology**, CBS Publishers, New Delhi, Gynaecology (1996).
2. Jeffcoate, **Gynaecology**, Union book Publishers, Karachi (1980).
3. Bhattacharya, **Gynaecology**, Butterworth and Co Publishers, Lahore (1981).
4. Robert Kistner, **Gynaecology**, Mosby Publisher, USA (1990).

SURGERY-II (THEORY)

1. **Urogenital System:** Urinary symptoms and investigations, Anuria, Prerenal, renal and post-renal anuria.
2. **Kidney and Ureters:** Hydronephrosis pyonephrosis renal calculus and ureteric calculus, Renal tuberculosis, Perinephric abscess, Neoplasms of kidney.

3. **Urinary Bladder:** Retention of urine Etiology sign and symptoms and treatment, Incontinence of urine type cause and treatment, Vesical calculus definition, Causes sign symptoms and treatment, Cancer of urinary bladder.
4. **Prostate:** Benign prostate hypertrophy carcinoma of prostate acute and chronic prostatitis.
5. **Urethra and Penis:** Urethritis a urethral stricture.
6. **Testis and Sacrotum:** Imperfect descent of testis, Ectopic testis, Torsion of testis, Varicocele causes signs and symptoms investigation and treatment, Hydrocele types aetiology diagnosis and treatment, Epididymitis orchitis.
7. **Breast:** Retraction of nipples and abnormal discharge from nipples, Acute and sub-acute inflammation of the breast, indication for operative management, Tumor of the breast and its surgical management.
8. **Lungs:** Cold abscess, Empyema: acute, subacute and chronic, Pneumothorax, hemothorax, pleural effusion, Foreign body in trachea and bronchus, Tumor of bronchi and lung, Lung abscess, Post operative pulmonary complication, Tracheostomy: indication and method of tracheostomy.
9. **Thyroid Gland:** Hypothyroidism, Goiter: its classification, simple goiter and toxic goiter, Neoplasm of the thyroid gland.
10. **Veins:** Deep vein thrombosis: Prevention, detection and treatment, Varicose vein: Examination, Sign, Symptoms, treatment and complication.
11. **Artery:** Arterial ischemia and occlusion, gangrene, amputation and arterial aneurysm.
12. **Heart:** Congenital disease of heart.
13. **Head:** Head injury and its management.
14. **Burn:** Depth and degree of burns, Estimate of extent of burns, Laboratory examination of a burn patient, sign and symptoms of fluid and electrolytes deficiency in burn patient, oral replacement therapy of a burn patient.
15. **Anesthesia:** Local, regional and general anesthesia.

16. **General Principles of Orthopaedics:** Definition, fracture, dislocation and sub-luxation displacement, Delayed union of fracture, Factor influencing time for fracture healing, Causes of delayed union of fracture, Stable and unstable fracture, Complication of fracture, Immediate, early and late complication, Special types of fracture, Stress fracture and pathological fractures, Infection of bones and joints, Acute and chronic osteomyelitis, Acute suppurative arthritis, Tuberculosis arthritis and osteomyelitis.

SURGERY-II (CLINICAL)

1. **Clinical Surgery:** Trauma and emergency, Wound healing factors effecting wound healing, Types of wounds and their closure, Management of severely injured, Examination and management of external bleeding, Control of pain,
2. **Emergency Room Work:** Identification of patients, History of patients, Physical examination, Laboratory examination.
3. **Minor Surgical Procedures:** Abscess drainage, Toe nail excision, Venous cut down, Circumcision, Stitching of cut down

RECOMMENDED BOOKS

1. Bailey and Love's, **Short Practice of Surgery**, 22nd Edition, Chapman and Hall Medical, London (1995).
2. K Das, **Handbook of operative Surgery**, 6th Edition, Dr S Das, Calcutta (1984).
3. Schwartz, S Spencer, **Principle of Surgery**, 5th Edition, Monotype Composition Co, Yale (1989).
4. Richard M Stillman, **General Surgery**, 3rd Edition, Prentice Hall International Inc, New Jersey (1988).
5. Altaf Hussain Rathore, **Short Text Book of Surgery**, Vol I and II, 1st Edition, Ilmi Kitab Khana, Lahore (1982).
6. Bruce E Jarrell and R Anthony Carabasi, **NMS–Surgery**, 2nd Edition, Harward Publishing Co, Pennsylvania (1991).
7. Peter C Amandro, **Year Book of hand Surgery**, Mosby, New York, (1995)
8. Minhajuddin Shaikh Differential Diagnosis in Medicine and Surgery, D K Book Stall, Karachi.
9. John L Wilson, **Handbook of Surgery**, 5th Edition, Lange Medical Publication, California, (1973).
10. K Das, **Clinical Methods in Surgery**, 12th Edition, Prince Book Depot, Lahore (1984).
11. **Hamilton Bailey's, Demonstration of physical signs in Clinical Surgery**, 15th Edition, John Wright and Sons Ltd, Birmingham (1973).

12. Anis Ismail, **Jarahat-e-Amliah Sagheera**, 1st Edition, Ajmal Khan Tibbia College, Aligarh (1995).
13. Tafseer Ali and Anees Ismail, **Ilmul Jarahat in the Light of History**, 1st Edition, Ajmal Khan Tibbia College, Muslim University, Aligarh (1996).
14. M. Kabeeruddin, **Ilmul Jarahat**, Vol 1,2,3,4,5,6, Mehboob-ul-Matabae Burqi press, Delhi (1930).
15. Nazir Ahmed Majid, **General Surgery**, Vol 1, Mehran Book Depot, Hyderabad (1965).
16. Abul Qasim Qalaf, **Al-Tasreef**, Nami Press, Lahore (1973).
17. Muhammad Abdul Qavi Luqman, **Jarahat-e-Sagheera**, Awan publication, Lahore (1961).
18. Muhammad Abdul Haleem Lakhnawi, **Rehber Surgery**, 1st Edition, Islami Burqi Press, Lucknow (1940).

CLINICAL DIAGNOSTICS (THEORY)

1. **Rationale: *Aims and Objectives***; This module will build on experience and understanding developed in the therapeutic relationship. It will provide a thorough understanding of the functioning examination and assessment of the body systems such as cardiovascular respiratory gastrointestinal and neurological students take training in clinical knowledge examination skills and to provide an integrated approach in understanding the causes and the essential features of the symptoms and signs most commonly seen in clinical practice. This will draw on the skills attained in the human science, clinical science and previous diagnostic skill modules.
2. **Diagnosis: *The students will achieve an understanding and detailed knowledge of the differential diagnosis of the symptoms and signs related to the following***; The cardiovascular system, The respiratory system, The gastrointestinal system, The urinary system, The nervous and musculoskeletal system, Other problems, including weight disorders, temperature changes, psychiatric problems, ear, nose, and throat problems emergency conditions and conditions requiring immediate referral for diagnostic and therapeutic reasons, Additionally in cases where the diagnostic investigations available to herbal practitioners are insufficient to exclude a serious pathology, students will be aware of their urgent responsibility to refer for thorough medical investigations. Example of such cases include dysphagia, bleeding per rectum, severe cardiac arrhythmias.
3. **Contents**: Clinical review: Review of general history, review of examination.

4. **Cardiovascular Problems:** Review of examination of the heart with differentiation of normal heart sounds (S1 and S2) and murmurs, Differential diagnosis of chest pain palpitation shortness of breath edema ascites changes in blood pressure, lower limb pain.
5. **Respiratory Problems:** Review of the examination of the lungs with recognition of bronchial sound, added sounds, wheezing sounds, pulmonary edema, bronchial breathing, peak flow rate measurement. Differential diagnosis of clubbing, cough, cyanosis, sputum production and haemoptysis.
6. **Abdominal Problems:** Review of examination of the abdomen, Differential diagnosis of abdominal pain, nausea, and vomiting, constipation, diarrhea, GIT bleeding, indigestion.
7. **Urogenital Problems:** Review of urogenital system and urinalysis, Differential diagnosis of dysuria and frequency, haematuria, polyuria, incontinence
8. **Nervous and Musculoskeletal Problems:** Review of the examination of the nervous and musculoskeletal system, Differential diagnosis of convulsions, fatigue, headache, facial pain, coma, pins and needles, tremors walking difficulty vertigo, dizziness and blackouts, Assessment of: orientation motor activity/strength, pupil reaction, cranial nerves, ophthalmoscope, peripheral nervous system, central nervous system, tone, power, coordination reflexes sensations.
9. **Skin Problems:** Review of the examination of skin, Skin manifestation in systemic disease, Drug skin eruptions.
10. **Miscellaneous Problems:** Weight change: anorexia, bulimia, other causes of weight loss and obesity, Pyrexia and hypothermia, Ear, nose and throat problems; hoarseness, sore throat, deafness.
11. **Psychiatric Problems:** Anxiety, Depression, Suicide.
12. **Emergency Medicine and Conditions Requiring Immediate Referral:** Heart, heart attack, acute left heart failure, Diabetic emergencies, hyper and hypoglycemic coma, status epileptics, Status asthmatics, Meningitis, Fracture of neck of femur, Drug overdoses and poisoning, Other states where immediate referral is required for diagnostic clarification e.g. bleeding per rectum, severe cardiac arrhythmias.

CLINICAL DIAGNOSTICS (CLINICAL)

Uses of chemical, physical, microbiological, pathological, radiology, X-Ray, radioactive isotopes, scanning MRI, CT Scan, DNA investigations, electrocardiography, X-Ray chest, echocardiography, thallium scan, stress testing, Holter and angiography etc.

RECOMMENDED BOOKS

1. Rowley N, (1994). **Handson (A Manual of Clinical Skills for Complementary Medical Practitioners** (1st ed.) Hodder and Stoughton.
2. Lumley, JSP and Bouloux, PMG (1994). **Clinical Examination of a Patient** (1st ed.) Butterworth-Heinemann. Ltd.
3. Toghill, P (ed) (1995). Examining patients — **An Introduction to Clinical Medicine** (2nd ed.) Edward Arnold.
4. Bates B (1987), **A Guide to Physical Examination and History Taking.** Harper and Row. Epstein O, Perkin G, De Bono D. and Cookson J, (1992). **Clinical examination.** Gower. Talley N and O' Connor S, (1988). **Clinical examination: A guide to physical diagnosis** (2nd ed.) Blackwell.

CLINICAL METHODS AND THERAPEUTICS-III (THEORY)

Following pattern of the exposition of medical knowledge would be followed from Unani and modern point of view. General introduction, definition, historical background, epidemiology, causes, pathogenesis, clinical features (signs and symptoms), diagnosis (investigation and specialized labs support), principles of medicine (management and dietary management), prognosis, complications and preventions.

1. **Cardiovascular Diseases (CVS):** Angina pectoris, Arrhythmias arterial fibrillation, Bradycardia, Pericardial effusion, Endocarditis, Pericarditis, Myocarditis, Cardiac dilatation, Cardiac enlargement, Myocardial infarction, Hypertension and hypotension, Palpitation, Fainting, Aortic regurgitation, Aortic stenosis, Mitral regurgitation, Atheroma, Aterio sclerosis, Cardiac thrombosis, Aneurysm, Congestive heart failure.
2. **Diseases of the Nervous System:** Trigeminal neuralgia, Meningitis, Cerebral edema, Cerebral tumour, Giddiness, Vertigo, Coma, Insomnia, Nightmares, Melancholia, Hypochondriases, Mania, Epilepsy, Paralysis, Paraplegia, Hemiplagia, Facial paralysis (Bell's palsy), Numbness, Convulsion or tetanus,

Tremors, Parkinsonism, Chorea, Trembling, Syncope, Apoplexy, Stroke, Cerebral embolism, Myelitis, Tabes dorsalis, Neurasthenia, Guillain Barre syndrome, Acute febrile polyneuritis, Neuritis, Neuralgia.

3. **Diseases of Respiratory System:** Asthma, Pneumonia, Pleurisy, Bronchitis, Bronchial carcinoma, Bronchiectasis, Emphysema, Pulmonary tuberculosis, Haemoptysis, Pertussis (cough), Whooping cough.

CLINICAL METHODS AND THERAPEUTICS-III (CLINICAL)

Clinical medicine consisting of detailed history taking with systemic examination involving nearly all systems of human body regarding positive findings, differential diagnosis, laboratory and allied diagnostic investigations, final diagnosis, management, specialized referral highly specialized management, prognosis, complications, preventions and follow up.

RECOMMENDED BOOKS

1. Burhanuddin Nafis, Hakim Mohammad Kabeeruddin (Translated), **Sharaha-e-Asbab**, Shokat Book Depot, Gujrat (1984).
2. Burhanuddin Nafis, Translated Khawaja Rizwan Ahmed (Translated), **Sharaha-e-Asbab** Darul Talifat, Karachi (1990).
3. Hakim Mohammad Ajmal Khan, **Haziq**, Shokat Book Depot, Gujrat (1990).
4. Hakim Mohammed Said, **Tajrubate Tabib**, Hamdard Foundation, Karachi (1990).
5. Hakim Ghulam Jilani, **Makhzanul Hikmat**, Tibbi Kutub Khana, Lahore (1985).
6. Hakim Muhammad Hassan Qarshi, **Jam-i-ul Hikmat**, Maktab Mushir ul Attibba, Lahore (1986).
7. Bu Ali Seena, Translated Hakim Kabeeruddin (Translated), **Al-Qanoon**, Mallick Sons, Faisalabad (1991).
8. Davidsons **Practice of Medicine**, (CRW Edward, and IAD Boucher: Eds), BPC Publisher, London (1990).

CURRICULUM FOR M.Phil/Ph.D Programme

Rules and Regulations

The Faculty/College of Eastern Medicine will enroll students for pursuing their research studies leading to the award of either M.Phil. (Master of Philosophy) or Ph.D. (Doctor of Philosophy) degrees in Eastern Medicine. The higher degree programme is being visualized to give more impetus to scientific, clinical and technological research and development.

1. Admissions and Examination

The minimum duration of studies for M.Phil. Degree in Eastern Medicine shall be two years. The degree will comprise of courses and researchwork by thesis with course work. The thesis shall be a piece of work comprising either a discovery of new facts or findings and interpretation of results so that the student capacity for critical analysis and evaluation could be examined. In addition to dissertation (Thesis) students shall have to pass a minimum of five courses as approved by the Board of Advance Studies and Research.

2. Eligibility for Admission

The admission to M.Phil. Class shall be open to students possessing either five years Bachelor's degree in Eastern Medicine BEMS or equivalent degrees from any recognized university.

SCHEME OF STUDIES

M.Phil Examinations

Principle of Eastern Medicine

Serial No.	Course Title	Theory	Practical	Total Marks
First Year				
1	Fundamentals of Temperament	100	100	200
2	Fundamentals of Humors	100	100	200
3	Auxiliary Management of Diseases	100	100	200
4	Biostatistics	100	—	100
Second Year				
5	Thesis	200		200
				900

Clinical Methods and Therapeutics

Serial No.	Course Title	Theory	Practical	Total Marks
First Year				
1	Therapeutics I	100	100	200
2	Therapeutics II	100	100	200
3	Rational Phytotherapy	100	—	100
4	Internal Medicine	100	—	100
5	Biostatistics	100	—	100
Second Year				
6	Thesis	200		200
				900

Obstetrics and Gynaecology

Serial No.	Course Title	Theory	Practical	Total Marks
First Year				
1	Gynaecological Disorders in the context of Female Health Care	100	—	100
2	Infectious Gynecological Diseases	100	100	200
3	Maternal and Child Health	100	100	200
4	Uro Gynecological Disorder	100	—	100
5	Biostatistics	100	—	100
Second Year				
6	Thesis	200		200
				900

Materia Medica

Serial No.	Course Title	Theory	Practical	Total Marks
First Year				
1	Principle of Drug Action	100	100	200
2	Action of Simple Drugs	100	100	200
3	Drugs of Animal and Mineral Origin	100	100	200
4	Biostatistics	100	—	100
Second Year				
5	Thesis	200		200
				900

Community Medicine

Serial No.	Course Title	Theory	Practical	Total Marks
First Year				
1	Health Economic Evaluation	100	—	100
2	Public Health Administration	100	100	200
3	Communicable and Occupational Disease	100		200
	Epidemiology		100	
	Epidemiology and Pharmaco			
4	Epidemiology	100	—	100
5	Biostatistics	100	—	100
Second Year				
6	Thesis	200		200
				900

Phytomedicine

Serial No.	Course Title	Theory	Practical	Total Marks
First Year				
1	Phytomedicine –I	100	100	200
2	Phytomedicine -II (Aromatic Medicinal Plant, Phytochemicals)	100	100	200
3	Phytochemistry	100	100	200
4	Biostatistics	100	—	100
Second Year				
5	Thesis	200		200
				900

DETAILS OF COURSES

PRINCIPLE OF EASTERN MEDICINE

1. Fundamentals of Temperament – Theory

Importance of temperament on human body

Concept of temperament.

Classification and development of conceptual features.

Identification of temperament.

10 basic points of avicenna to evaluate temperament.

Symptoms of four temperaments.

Development of maltemperament.

Classification of maltemperament and their production in human body.

Line of treatment of maltemperament according to different type of maltemperament their principles of management.

Fundamentals of Temperament – Practical

History of 60 patients according to temperament

15 cases of sanguinous temperament

15 cases of bilious temperament

15 cases of phlegmatic temperament

15 cases of melancholic

All cases should be divided in to age group and gender

2. Fundamentals of Humours – Theory

Basic of humours, health & diseases

A. Production of humors.

- Concept of humours, their types and their production.
- Role of humours in health of diseases.
- Qualitative of Quantitative aspect of humours.
- Specific ratio of humours in body and disturbance in this ratio.
- Relation of humours with other body fluids.
- Conversion of four humours into different body fluids & secretions.
- Effect of six essential causes in preservation of health.
- Concept of six essential causes and their normal impact on life.
- Role of six essential causes in preservation of health.
- Use of these causes in maintaining of health.
- Role of six essential causes in treatment.

- Management of patient according to causes in different diseases.

B. Fundamentals of Humors – Practical

C. Analytical study of humors

To study the four colour of humours

To study the humours according to place

3. Auxilliary Management of Diseases – Theory

Role of diversion in treatment.

Concept of diversion, types, conditions, and method of diversion.

Role of elimination in treatment.

Concept of elimination, type, conditions and different routes for elimination.

Concept of pulse, urine and stool in diagnosis of diseases.

Auxilliary Management of Diseases – Practical

Study of pulse by new techniques

Diagrammatic study of different types of pulse according to philosophy of Eastern Medicine.

4. Biostatistics – Theory

1. Introduction:
 - What is Biostatistics?
 - Application of statistics in biological sciences.
2. Sample and Population:
 - Simple random sampling.
 - Sampling distribution and standard error
 - Stratified random sampling
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 - Addresses, links and Downloading
 - Searching the Internet
 - E-mail and Newsgroups
 - Favorites, Security and Customizing Explorer
11. Complete Statistical Package Like SPSS, Mintab and Computer graphics

RECOMMENDED BOOKS

PRINCIPLE OF EASTERN MEDICINE

1. Hakim Mohammad Kabeeruddin, **Kulliyat-e-Qanoon** (Translated), Shaikh Muhammad Bashir and Sons, Lahore (1930).
2. Hakim Khawaja Rizwan Ahmed, **Kulliyat-e-Qanoon** (Translated) Darul Talifat, Karachi (1971).
3. O Cameron Gruner (Ed.), **A Treatise on the Cannon of Medicine of Avicenna**, Luzac and Co, London (1930).
4. Hakim Muhammad Kabiruddin, **Kulliyat-e-Nafeesi**, Matbuat-e-Sulemani, Lahore (1934).
5. Hakim Khawaja Rizwan Ahmed, **Moojazul Qanoon**, Darul Talifat, Karachi (1987).
6. Iftikhar-ul-Hassan Nadvi, **Tauzeeh-ul-Moojiz**, Islamic Publications, Khanewal (1981).
7. Altaf Ahemed Azmi (Ed.), **Mabadiyat-e-Tibb**, Liaquat Ali, Lahore (1992).
8. Rasheed Ashraf Nadvi, **Firdaus-al-Hikmat**, Diamond Publications, Lahore (1996).

BIOSTATISTICS

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3rd Edition, (1983).
2. Zar J H, **Biostatistical Analysis**, Francis Hall, NJ, USA.
3. Nilton J S, Tsokos J D, **Statistical Methods in Biological and Health Sciences**, (McGrew-Hill) (1983).
4. Sher Muhammad Chaudhry, **Introduction to Statistical Theory**, Ilmi Kitab Khana, Urdu Bazar, Part-I and II, Lahore.

CLINICAL METHODS AND THERAPEUTICS

The Basis of Therapeutics

- Study of Unani System of Medicine for Different diseased
 - (a) Their cause
 - (b) Art of Diagnosis
 - (c) Prognosis
 - (d) Treatment
- Study of comprehensive clinical/Bed side techniques
Bedside techniques of hospitalized patient.

1. Advance Therapeutics – Theory

Comprehensive clinical management of human ailments with special emphasis on clinical diseases and their intensive treatment on modern lines with practical creative and allied supportive therapeutic segments.

Advance Therapeutics – Practical

Application of different Unani techniques to diagnosis diseases.

- (a) Study of samples of urine by different techniques (physical method, biochemical method) 25 cases.
- (b) Application of different techniques to diagnose of disease by pulse 25 cases.
- (c) To treat the patient by following unani techniques Massage, Enema, Cupping.

2. Rational Phytotherapy – Theory

The detailed determination of clinical approaches and its applications and implications to cure and prevent the diseases and promote health care. Medicinal plants, phytomedicine and phytotherapy, Central nervous system (CNS), Cardio vascular system (CVS), Respiratory system (RS), Digestive system (GIT), Urinary tract, Skin, Trauma, Rheumatism and pain, Age and resistance to diseases,

3. Internal Medicine – Theory

This clinical course is a predominantly in-hospital experience during which the student observes and participates in the assessment, diagnosis and medical management of patients in general internal medicine as well as those areas traditionally identified as subspecialties of internal medicine.

4. Biostatistics – Theory

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 - E-mail and Newsgroups
 - Favorites, Security and Customizing Explorer
11. Complete Statistical Package Like SPSS, Mintab and Computer graphics

RECOMMENDED BOOKS

CLINICAL METHODS AND THERAPEUTICS

1. Burhan Uddin Nafis, Hakim Mohammad Kabir Uddin (Translated), **Sharaha-e-Asbab**, Shokat Book Depot, Gujrat (1984).
2. Burhan Uddin Nafis, Translated Khawaja Rizwan Ahmed (Translated), **Sharaha-e-Asbab** Darul Talifat, Karachi (1990).
3. Hakim Mohammad Ajmal Khan, **Hazique**, Shokat Book Depot, Gujrat (1990).
4. Hakim Muhammed Said, **Tajrubate Tabib**, Hamdard Foundation, Karachi (1990).
5. Hakim Ghulam Jilani, **Makhzanul Hikmat**, Tibbi Kutub Khana, Lahore (1985).
6. Hakin Muhammad Hassan Qarshi, **Jamaul Hikmat**, Makatb Mushir ul Attabba, Lahore (1986).
7. Bu Ali Seena, Translated Hakim Kabir Uddin (Translated), **Al-Qanoon**, Mallick Sons, Faisalabad (1991).
8. Davidsons **Practice of Medicine**, (CRW Edward, and IAD Boucher: Eds), BPC Publisher, London (1990).

BIOSTATISTICS

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3rd Edition, (1983).
2. Zar J H, **Biostatistical Analysis**, Francis Hall, NJ, USA.
3. Nilton J S, Tsokos J D, **Statistical Methods in Biological and Health Sciences**, (McGrew-Hill) (1983).
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OBSTETRICS AND GYNAECOLOGY

1. Gynaecological Disorders in the context of Female Health Care – Theory

The aim of this module is to introduce the student to the patterns of female health care provision in the context of changing global processes. The module will introduce and analysis of the theories and will outline the key players influencing the balance between public and private resourcing, and between prevention/primary care and secondary care. The growth of supranational corporations involved in health care provision, insurance and pharmaceuticals will be outlined. Further the primary secondary and tertiary health care in gynaecological practice will be explained. Comprehensive overview of common problems related to pelvic floor injury, incontinence, tissue prolapses and defecation disorders would be discussed. An understanding of pelvic floor dysfunction and its appropriate management and intervention will be outlined.

2. Infectious Gynaecological Diseases - Theory

This course introduces students to the main infectious Gynaecological diseases to be found in common practices like family planning, contraceptive, sexually transmitted diseases and preventive medicines, their cause and methods of transmission. It also examines the relationship between the infectious diseases and public policy, and looks at the economic, political and social factors contributing to the spread of infectious disease.

Infectious Gynaecological Diseases - Practical

History of 30 cases

- a) 15 cases of gynecological problems
- b) 15 cases from obstetrics

3. Maternal and Child Health - Theory

The course provides an introduction to the problems facing mothers and children. The lectures examine how infection, malnutrition and maternal and child health services affect the outcomes of pregnancy. HIV/AIDS, malaria, diarrhoeal disease and parasitic diseases are examined in detail. The factors influencing child developing countries are studied, in particular the effects of poverty and migration of health.

4. Uro Gynaecology and Disorder of the Female Pelvic Floor — Theory

This clinical course is a combination of in-hospital and ambulatory experiences during which the students observe and participate in the assessment, diagnosis and treatment of the female patient with either normal or pathological obstetric and gynecological processes while enhancing skills in the medical management of the patient. The spectrum of diseases peculiar to women and pregnancy; influences of medical, surgical and psychiatric disease of the reproductive process; and influences of female biology on health and disease processes outside the reproductive tract. Social problems of family planning, population, and abortion are also considered.

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11. Complete Statistical Package Like SPSS, Minitab and Computer graphics

RECOMMENDED BOOKS

OBSTETRICS AND GYNECOLOGY

1. Rashid Latif, **Gynaecology**, CBS Publishers, New Delhi, Gynecology (1996).
2. Jeffcoate, **Gynaecology**, Union book Publishers, Karachi (1980).
3. Bhattacharya, **Gynaecology**, Butterworth and Co Publishers, Lahore (1981).
4. Robert Kistner, **Gynaecology**, Mosby Publisher, USA (1990).

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MATERIA MEDICA

1. Principal of Drug Action — Theory

This course is designed to provide the students with an introduction to the usefulness of compounds as drugs. Topics include drug absorption, distribution, metabolism (pharmacokinetics), carcinogenicity, toxicity and resistance.

Autonomic Nervous System and Central Nervous System Drugs

It is an introduction of unani drugs that affect the function of the CNS and ANS, Opioids, Hypericum, anti-convulsants, antidepressants, psychomotor stimulants and anesthetics.

Pharmacokinetics of Herbal Medicine

The introduction to the subject with detail studies of bioavailability of Unani drugs or their constituents. Methods of estimation of bioavailability. Pharmacokinetic evaluation of unani medicine with reference to their absorption, distribution, incorporation and excretion (metabolism).

Endocrine Pharmacology and Therapeutics

It provides the student with an exposure to endocrine pharmacology with emphasis on the feedback mechanism within the endocrine system that are responsible for normal endocrine function as well as the interventions necessary to correct disorders and imbalances. Key concepts, major categories of drugs, accessing information on unani drug, actions and side effects, unani drug management issues, liaison with patients and general practitioners.

Principal of Drug Action – Practical

Bioavailability and biorelevant equivalence studies of different drugs of mineral and animal in origin.

- a) In vivo and vitro evaluation
- b) Formulation development

- c) Bio studies by using animal and human model
- d) Toxicological evaluation

2. Action of Simple Drugs – Theory

(a) Drugs acting on GIT

- Elaichi kalan
- Anar Dana
- Zeera Seyah
- Amla
- Jaiphal
- Sonth
- Rai
- Imli

(b) Drugs acting on CNS Stimulant

- Sammulfar
- Maghaz Akhrot
- Maghaz Petha
- Coffee
- Zafran
- Jadwar
- Ajawain Khurasani

(c) Drugs acting on CVS

- Katha
- Bari Elaichi
- Ambar
- Narkachur
- Zarnmbad
- Abresham
- Ustukhudus
- Belgari
- Post Akhroot
- Lakh

(d) Drugs acting on Endocrine system

- Ailwa
- Raiwand Chini
- Piyaz
- Bhang
- Jaiphal
- AlfaAlfa

3. Drugs of Animal and Mineral Origin – Theory

- Abresham

- Ambar
- Asl
- Lakh
- Marwarid/Moti
- Mom/Shama
- Moonga
- Mushk
- Aqiq
- Chandi/Fizza
- Faulad
- Gandhak
- Javakhar
- Lajward
- Gold
- Naushadar
- Sanjg-e-Jerहत
- Silajit
- Sohaga/Bawraq
- Surma
- Tutia
- Zahar Mohra

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RECOMMENDED BOOKS

MATERIA MEDICA

1. V E Tyler, Lyn R Brody, James E Robess, **Pharmacognocny and Biotechnology** Lea and Febiger, Philadelphia (1991).
2. Betram G Kutzing, **Basic and Clinicals Pharmacology**, Prentice Hall, International Inc, Newyourk (1989).
3. Goodman and Gillman, **The Pharmacological Basis of Therapeutics**, Maxwell MacMillan, London (1991).
4. Bowman, W C, Rand, M. **Text Book of Pharmacology**, Blackwell, London (1986).
5. Clarke Brater Johnson, G V, **Goths Medical Pharmacology**, Mobsy Company, London (1988).
6. Hson-Mou CHANG, Paul Pui Hay BUT, **Pharmacology and Application of Chinese Materia Medica**, Vol I and II, World Scientific Publishing cop (1983).

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COMMUNITY MEDICINE

1. Health Economic Evaluation – Theory

Brief overview of economics and health economics, examination of analysis used in epidemiological and clinical research, cost-effectiveness analysis, cost minimization analysis, cost-utility analysis (including determination of utilities), cost benefit analysis, cost of illness studies and use of economic methods in priority-setting. Lectures and seminars, written report required, presenting an economic evaluation of a detailed review of the economic literature in a particular area.

2. Public Health Administration – Theory

Introduction to practical aspects of managing a health unit from the viewpoint of a Medical Officer of Health. The organization of Public Health services,

relationships with the Board, Leadership and management, budgeting and human resource issues including labor relations. Problem based approach in a seminar format.

Public Health Administration – Practical

Visit to Basic Health Unit, and collect 15 cases

Visit to District Headquarters Hospital, and collect 15 cases

Visit to Rehabilitation Centre, and collect 15 cases

Visit to Primary Health Care Center 15, and collect cases

Visit to Mentally Retarded Patients Centre, and collect 15 cases

Visits to vaccination centres of various units

3. Communicable and Occupational Disease Epidemiology – Theory

Consideration of the specialized methods used in the investigation and control of communicable disease. Detailed review of the Epidemiology of the major communicable diseases. Review of the descriptive Epidemiology (distribution, trends, risk factors) of the major chronic diseases with emphasis on the circulatory diseases, cancer, injuries, and mental health problems. Approaches to primary and secondary prevention. Clinical knowledge about prevention, recognition, diagnosis and treatment of occupational and environmental disorders. Etiology, natural history and health outcomes of important categories of occupational/environmental diseases. Lectures, presentations.

4. Epidemiology and Pharmacoepidemiology – Theory

An overview of Epidemiology, uses, methods and data sources. Descriptive and analytical Epidemiology. Lectures and assignments in which students will work with data and will gain experience in critically reviewing epidemiological literature. Major principles of design, analysis and interpretation of epidemiologic research. Material presented in a quantitative manner. Issues in and methodology of pharmacoepidemiology. Discussion on the bias and confounders possible at every stage of a Pharmacoepidemiological study, in drug utilization review, drug effectiveness, risk/benefit assessment and other topics.

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COMMUNITY MEDICINE

1. Mohammad Ilyas, **Community Medicine and Public Health**, Time Traders, Karachi.
2. Karen A Savcier, **Perspective in Family and Community Medicine**, Mosby Year Book, London (1991).
3. Charles H Hennekens, **Epidemiology in Medicine**, Little Brown and Company (1987).
4. Hakim Ikral Ali Qureshi, **Qanoon-e-Sehat**, Text Books Board, Karachi (1996).
5. Muhammad Usman Khan, **Mubadi-i-Sehat**, Hamdard Academy, Karachi

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1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3rd Edition, (1983).
2. Zar J H, **Biostatistical Analysis**, Francis Hall, NJ, USA.
3. Nilton J S, Tsokos J D, **Statistical Methods in Biological and Health Sciences**, (McGrew-Hill) (1983).
4. Sher Muhammad Chaudhry, **Introduction to Statistical Theory**, Ilmi Kitab Khana, Urdu Bazar, Part-I and II, Lahore.

PHYTOMEDICINE

1. Phytomedicine I – Theory

- I. The development of Phytomedicine
- II. How medicinal plants work?
- III. Active constituents and Quality control
- IV. The applications of medicinal plants:
 - a. Herbalism
 - b. Aromatherapy
 - c. Homoeopathy
 - d. Ayurvedic and Unani medicine
- V. Key medicinal plants: A visual guide of 100 medicinal plants from around the world with details of their habitat; botanical description; constituents;

actions; Cultivation, Harvesting and processing techniques; traditional and current uses; toxicity and Knowledge of latest development and research.

I. Cardiovascular System

CARDIAC STIMULANTS

- Zafran
- Strophanthus
- Digitalis

ON BLOOD VESSELS

A. Coronary dilators

- Zaranbad

B. Hypotensives

- Valerian
- Podina
- Ustukhudus
- Sonth

C. Vasoconstrictor

- Amla

D. Sclerosis of the vessels

- Posth Kikar
- Katha
- Posth Akhrot
- Posth Arjun

E. Haematonics

- Bathwa
- Amla
- Anar
- Methi
- Alfa Alfa

II. Gastro Intestinal System

DIGESTIVE

- Zeera Seyah
- Lemun
- Anisoon
- Hing

ANTACID

- Tabasheer
- Muletthi
- Ispaghool

APPETIZER

- Zira
- Ajwain
- Saunf
- Anar Dana
- Imli
- Tez Paat

DRUGS AFFECTING THE FUNCTION OF LIVER

- Zaravand Mudaharaj
- Afsanteen
- Zarishk
- Kawar Gandal
- Kasni
- Gul-e-Ghafis
- Mako
- Jhao

ANTIEMETICS

- Khas
- Turanj
- Koknar
- Jamun
- Falsa

ANTIPYRETICS

- Biranjasif
- Atis
- Bachnag
- Afsanteen
- Chiraita
- Shahtra
- Kutki

III. Urogenital System

DRUGS USED IN URINARY TRACT INFECTIONS

- Kabab Chini
- Burg-e-Shisham
- Zarishk
- Kharkhsak Khurd
- Damul Akhwain

IV. Antiseptics, Germicidals And Fungicidals

- Gheekwar
- Ajmud
- Hing
- Balsan
- Neem
- Tulsi
- Kachnal
- Loban
- Nakchikni
- Bhangra
- Sandal

ANTHELMINTICS AND VERMIFUGES

A. For Round-Worms

- Chalia
- Post Neem

B. For Tape-Worm

- Baobarng
- Kamila
- Posth Anar
- Bakayen

C. For Thread-Worms

- Burg-e-Aru
- Roghan-e-Tarpeen
- Roghan-e-Neem
- Darmana

DEODORIZERS (ANTISEPTICS)

- Gugal
- Murmakki
- Kafur
- Haldi
- Behrozah
- Neem

V. Expectorants and Bronchodilators

- Bansa
- Gandna
- Khatmi
- Madar
- Sapistan

- Euclyptus
- Mulethhi
- Methi Dana
- Dar Chini
- Alsi

VI. Diuretics

- Tukhm-e-Khyareen
- Tukhm-e-Kharbuza
- Muli
- Khar Khsak Khurd
- Mako
- Kasni

VII. Antidiuretics

- Till
- Salajeet

Phytomedicine I – Practical

Practical will be performed depending upon the facilities and according to the subjects taught in theory

2. Phytomedicine II – Theory

I. AROMATIC MEDICINAL PLANTS

- i) The history and utilization of aromatic plants
- ii) Mode of action of essential oils
- iii) Methods of Preparation and Application of essential oils
- iv) Key aromatic medicinal plants: A visual guide of 40 aromatic herbs from around the world with details of their habitat, botanical description, constituents, actions, cultivation, harvesting and processing techniques, traditional and current uses and toxicity.

1. Cedar (Cedar wood).
2. Euclyptus
3. Jasmine
4. Lavender
5. Lemon
6. Lemon grass

7. Orange
8. Rose
9. Sandalwood
10. Aniseed
11. Basil
12. Camphor
13. Carrot seed
14. Cinnamon
15. Cloves
16. Coriander
17. Cumin
18. Fennel
19. Ginger
20. Grape fruit
21. Pine
22. Nutmeg
23. Tea tree
24. Cardamon
25. Palmarosa
26. Black papper
27. Osimum
28. Mentha

Herbal Cosmetics

1. Sweet almond
2. Hazelnut
3. Jojoba
4. Wheat Bran
5. Coconut
6. Olive Oil
7. Aloevera
8. Brassica
9. Linseed
10. Castor oil plant

II. Phytoceuticals

- a) Methods of extracting essential oils
- b) Methods of preparing flower remedies
- c) Formulation and product development
- d) Stability studies
- e) Quality control and quality assurance in phytoceuticals

Phytomedicine-II – Practical

Practical will be performed depending upon the facilities and according to the subjects taught in theory.

3. Phytochemistry - Theory

1. Introduction and general methods
2. Extraction, Separation and Isolation of constituents of medicinal plants
3. Characterization of known isolated compounds
4. Methods of studying metabolism
 - a. Fat and fatty acid metabolism
 - b. Terpenoid biosynthesis
 - c. Peptides and protein synthesis
 - d. Alkaloid and Glycosides biosynthesis and Secondary metabolites
5. Drugs of biological origin
 - a. Phenols and phenolic glycosides
 - b. Volatile oils and Resins
 - c. Saponins, Cardioactive drugs and other steroids
 - d. Alkaloids
 - e. Tumor Inhibitors from plants
6. Plant growth hormones and their metabolism
Biosynthesis, Mechanism of action of plant growth phytoharmones and control.

Phytochemistry – Practical

Practical will be performed depending upon the facilities and according to the subjects taught in theory

4. Biostatistics – Theory

1. Introduction:
 - What is Biostatistics?
 - Application of statistics in biological sciences.
2. Sample and Population:
 - Simple random sampling.
 - Sampling distribution and standard error
 - Stratified random sampling
 - Systemic and cluster sampling
3. Test of Hypothesis and significance:
 - Statistical hypothesis
 - Level of significance
 - Test of significance
 - Confidence intervals

- Test involving binomial and normal distribution
4. Goodness of fit test:
 - Chi-square distribution, its properties and application
 - Contingency tables
 - Test of homogeneity
 5. Student “t” and “F” Distribution:
 - Properties of “t” distribution and “F” distribution
 - Test of significance based on “t: distribution and “F” distribution.
 6. Analysis of Variance:
 - One-way classification
 - Partitioning of sum of squares and degree of freedom
 - Two-way classification
 - Multiple comparison tests such as LSD, P-values
 - The analysis of variance models
 7. Experimental Designs: (Advantages & Disadvantages)
 - Basic principle of experimental designs.
 - The completely randomized designs (CR-designs)
 - Randomized complete block designs (RCB-designs)
 - Latin square designs (LS-designs)
 - Factorial experimental designs
 - Computer method of statistical evaluation.
 - Co-relation/regression analysis
 8. Fundamentals basic concept of computers
 - History of Data Processing
 - Type of Computers
 - Components of a Computer
 - Computer system and Business Computer System
 - Backing Storage Devices
 - Unit of Memory
 - Viruses and Anti-viruses Issues
 9. System Analysis and Design
 - What is System
 - Step in system life cycle
 - Data Gathering and Data Analysis
 - Designing a New System
 - Development and Implementation of New System
 - Documentation
 10. Internet and e-mail
 - Internet and Microsoft Internet Explorer 5
 - Addresses, links and Downloading

- Searching the Internet
 - E-mail and Newsgroups
 - Favorites, Security and Customizing Explorer
11. Complete Statistical Package Like SPSS, Minitab and Computer graphics

5. THESIS

The research work will be carried out in any branch of Phytomedicine. The thesis shall embody the results of research, which may either be continuation to the existing knowledge of the subject, or application of known methods of research to some technical problems. This will also include seminar and viva-voce examination concerning research topics. Three copies of research thesis printed or type written shall be submitted for the examination at the end of the academic year. The candidate will retain the fourth copy of the thesis.

RECOMMENDED BOOKS

PHYTOMEDICINE

1. Evans W C, **Trease and Evan's Pharmacognosy**. 14th Ed. EIBS, Bailliere Tindall, London (2001).
2. Chief R, **The Macdonald Encyclopedia of Medicinal Plants**, MacDonald and Co Ltd London (1988).
3. McIntyre M, **Herbal Medicine for Everyone**, Penguin Books, London (1988).
4. Lockie A, N Geddes, **The Complete guide Homoeopathy**, Dorling Kindersley Ltd London (2001).
5. Lockie A, **Encyclopedia of Homoeopathy**, Dorling Kindersley Ltd, London (2001).
6. Ried D P, **Chinese Herbal Medicine**, Thorson. Pub group, Welling Borough, England (1987).
7. Hoffman D, **The New Holistic Herbal**, Element Books Limited, Dorset, England (1990).
8. Marby R, **The Complete New Herbal**, Elm tree Books London (1988).
9. Cooper M R, Jhonson, **Poisonous Plant and Fungi Illustrated Guides**, Her Majostry's stationary office London (1998).
10. Plateroni P C, **Family Guide to Alternative Medicine**, The Reader's Digest Association Ltd London (1991).
11. Burnney's, **The Illustrated Book of Herb: Their Medicinal and Culinary Uses** (1986).
12. Stuart book of M (ed.), **The Encyclopedia of Herb and Herbalism**, MacDonald and Co Ltd London (1987).
13. Mills's, K Bone, **Principles and Practice of Phytlotherapy**, Churchill Living Stone, London (2000).

14. Wanger, H et al, (ed.), **Economic and Medicinal Plant Research**, (vol.1-5) Sangam, Landon (1993).
15. Warrier P, et al, (ed.), **Indian Medicinal Plants**, (vol 1-5). Sangam, Landon (1993).

PHYTOCHEMISTRY

1. Tesar M B, **Physiological Bases of Crop Growth and Development**, American Society of Agronomy, Wisconsin, USA (1998).
2. Lawlow D W, **Photosynthesis Metabolism: Control and Physiology**, Langman Scientific and Technical, New York (1987).
3. Noble P S, **Physicochemical and Environmental Plant Physiology**, Academic Press, Inc New York (1991).
4. Filder A H, R K Hay, **Environmental Physiology of Plants**, Academic Press, New York (1987).
5. Hay RKM, A J Walker, **An Introduction to the Physiology of Crop Yield**, Langman Scientific and Technical, New York (1987).
6. Wilkins M B,(ed.), **Advanced Plant Physiology**, Pitman Ltd, London (1985).
7. Combs J, et al, (ed.), **Techniques in Bioproductivity and Photosynthesis**, Pergamon Press, New York (1985).
8. Gallon J R, A E Chaplin, **An Introduction to Nitrogen Fixation**, Cassell Educational Ltd London (1987).
9. Percy R W, et al, **Plant Physiological Ecology**, Chapman and Hall, London (1991).
10. Wareing P F, IDJ Phillips, **Growth and Differentiation in Plants**, Pergaman Press, New York (1986).

BIOSTATISTICS

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3rd Edition, (1983).
2. Zar J H, **Biostatistical Analysis**, Francis Hall, N J, USA.
3. Nilton J S, Tsokos J D, **Statistical Methods in Biological and Health Sciences**, (McGrew-Hill) (1983).
4. Sher Muhammad Chaudhry, **Introduction to Statistical Theory**, Ilmi Kitab Khana, Urdu Bazar, Part-I and II, Lahore.

RECOMMENDATIONS

1. It was unanimously agreed that the name of the degree in Tibb would be Bachelor of Eastern Medicine and Surgery (BEMS). The duration of the degree course will be 5 years.
2. The eligibility for admission in BEMS will be F.Sc. (Premedical), B.Sc. (in subjects of Zoology, Botany, Chemistry, Microbiology, Biochemistry, Physiology) or equivalent.
3. It was also suggested that Universities where BEMS degree course is being taught should have a hospital of Eastern Medicine.
4. The medium of instructions should be English. The subjects where the literature in English is not available may be taught in Urdu. The institutions should take responsibility of providing translated version of such literature in English. Funds should be provided by the HEC to publish Text Books and Reference Books in Eastern Medicine.
5. Government and HEC should establish a Center of Excellence in Eastern Medicine for the advancement of research and development.
6. Only the adequately qualified faculty/staff is recommended for teaching/establishing Eastern Medicine. The teacher and student ratio should be according to HEC approved criteria.
7. The BEMS degree should be equivalent to medical and allied sciences for admissions in the higher studies and research programs and also for the employment.
8. It is proposed that HEC and National Council for Tibb should recommend at their levels to the Ministry of Health/Health Departments for the creations of posts of medical officers (Tibb) in grade 17 and above in the government and semi-government hospitals for the BEMS graduates.
9. It is also proposed that the HEC and National Council for Tibb may recommend creation of seats in the government and semi-government hospitals for the internship of BEMS graduates.

10. It is also proposed that the HEC and National Council for Tibb request the government to construct or avail separate wards in the government and semi-government hospitals for the BEMS graduates. Government should establish independent Eastern Medicine hospitals in all the provinces of Pakistan.
11. It is observed by the committee that Faculties, College and Institutes where degree program has been started, they have not been given any representation in the National Council for Tibb, had they been given this privilege/opportunity they would have been in a better position to facilitate degree level education and its applications program. Therefore, it is strongly recommended that the Head of the institutions where BEMS degree program has been initiated should be nominated as members of the National Council for Tibb.
12. The course contents of BEMS, M.Phil / Ph.D. were critically reviewed, evaluated and appreciated by the Foreign Subject Expert Prof. Dr. Shigetoshi Kadota, Toyama Medical and Pharmaceutical University, Japan (Annexure–III).
13. Refresher courses for teachers training programme should be held by the HEC for BEMS graduate to upgrade their knowledge and skill and workshops for clinical research be organized as continuing educational programme.
14. The HEC should provide a sizeable grant to purchase laboratory instruments and equipments to upgrade the laboratory facilities as well to purchase books for the libraries.
15. The HEC should provide foreign scholarships to BEMS graduates for higher studies and research like other disciplines.
16. Foreign subject experts in the field of Traditional Medicine should be invited to deliver lectures and conduct workshops.