

**CURRICULUM**

**OF**

**BACHELOR OF EASTERN MEDICINE & SURGERY  
(BEMS)  
MPhil. and PhD.**

(Revised 2015)



**HIGHER EDUCATION COMMISSION  
ISLAMABAD**

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# PREFACE

The curriculum, with varying definitions, is said to be a plan of the teaching-learning process that students of an academic programme are required to undergo. It includes objectives & learning outcomes, course contents, scheme of studies, teaching methodologies and methods of assessment of learning. Since knowledge in all disciplines and fields is expanding at a fast pace and new disciplines are also emerging; it is imperative that curricula be developed and revised accordingly.

University Grants Commission (UGC) was designated as the competent authority to develop, review and revise curricula beyond Class-XII vide Section 3, Sub-Section 2 (ii), Act of Parliament No. X of 1976 titled “Supervision of Curricula and Textbooks and Maintenance of Standard of Education”. With the repeal of UGC Act, the same function was assigned to the Higher Education Commission (HEC) under its Ordinance of 2002, Section 10, Sub-Section 1 (v).

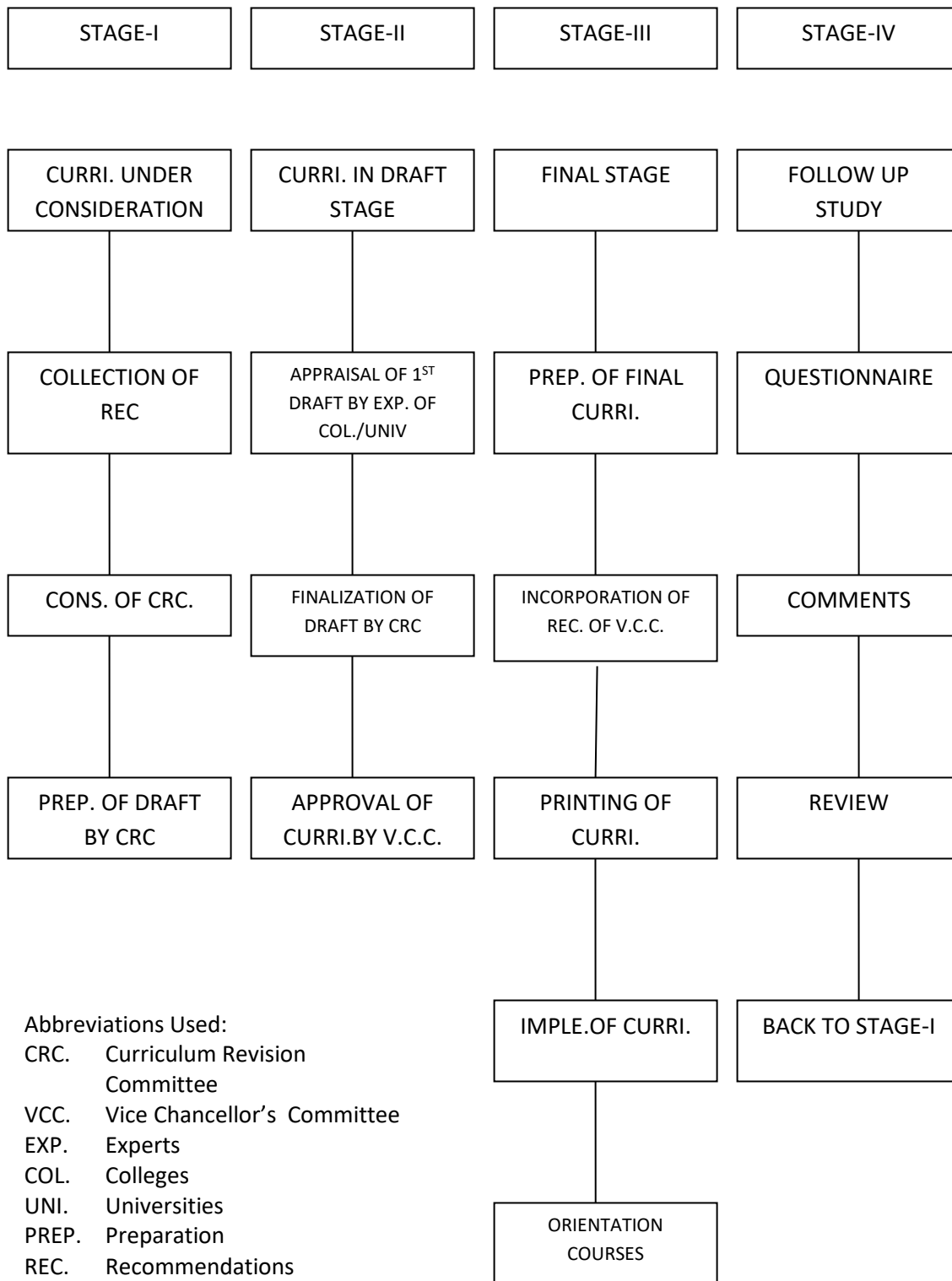
In compliance with the above provisions, the Curriculum Division of HEC undertakes the revision of curricula after every three years through respective National Curriculum Revision Committees (NCRCs) which consist of eminent professors and researchers of relevant fields from public and private sector universities, R&D organizations, councils, industry and civil society by seeking nominations from their organizations.

In order to impart quality education which is at par with international standards, HEC NCRCs have developed unified templates as guidelines for the development and revision of curricula in the disciplines of Basic Sciences, Applied Sciences, Social Sciences, Agriculture and Engineering in 2007 and 2009.

It is hoped that this curriculum document, prepared by the respective NCRC’s, would serve the purpose of meeting our national, social and economic needs, and it would also provide the level of competency specified in Pakistan Qualification Framework to make it compatible with international educational standards. The curriculum is also placed on the website of HEC <http://hec.gov.pk/english/services/universities/RevisedCurricula/Pages/default.aspx>

**(Fida Hussain)**  
**Director General (Academics)**

# CURRICULUM DEVELOPMENT PROCESS



## Introduction:

A meeting was held for finalization of *Eastern Medicine* curriculum, on March 30 to April 01, 2015, at Conference Room, Faculty of Eastern Medicine, Hamdard University, Karachi. Meeting started with recitation of Holy Quran by Dr. Khalil Ahmad Ansari.

Following members attended the meeting:

1. Prof. Dr. Hakim Abdul Hannan  
Vice Chancellor,  
Hamdard University,  
Karachi  
Convener
2. Prof. Dr. Zahir Javed Paracha  
Pro-Vice Chancellor,  
Qarshi University, Lahore, Al Hassan Plaza,  
149 Ferozpur Road, Lahore  
Member
3. Prof. Dr. Mahmood Ahmad  
Dean,  
Faculty of Pharmacy and Alternative Medicine,  
The Islamia University,  
Bahawalpur  
Member
4. Prof. Dr. Hakim Shahabuddin  
Dean,  
Faculty of Eastern Medicine,  
Hamdard University  
Karachi  
Member
5. Prof. Dr. M. A. K. Malghani  
Balochistan University of Information Technology,  
Quetta  
Member
6. Dr. Shehzad Hussain Sheikh  
National Institute of Health,  
Islamabad  
Member
7. Dr. Khalil Ahmad Ansari  
Lecturer UCCM,  
Islamia University Bahawalpur,  
Bahawalpur  
Secretary
8. Dr. Syed Muhammad Ali Shah  
A/P Dept. of Eastern Medicine,  
G.C. University, Faisalabad  
Member
9. Dr. Muhammad Akram  
A/P Dept. of Eastern Medicine,  
University of Poonch, Rawlakot,  
A.J.K.  
Member

10. Prof. H. Mansoor ul Aziz Principal, Jamia Tibbia Islamia, Faisalabad	Member
11. Mr. Moazzam Ali Ahmad CEO Natural Product Corporation, Islamabad	Member
12. H/Dr Rustum Ali Principal, Homoeopathic Medical College, Peshawar	Member
13. Hakim Abdur Rehman Lecturer, Qarshi University, Lahore	Member
14. Dr. Tabiba Tasneem Qureshi Vice Principal Acad., FEM, Hamdard University Karachi	By Invitation

- All the members strongly recommended that a 50 bed hospital shall be in the vicinity where BEMS program is being executed, so that bed side techniques and clinical training shall start from 3<sup>rd</sup> year. The universities where hospital has not yet established are directed to establish within four years however clinical training and house job can be offered to the students in affiliated hospitals also.
- Syllabus of Eastern Medicine was reviewed and finalized by the members NCRC and it was finalized, that from 2015 new admission in BEMS program will be preferred on semester system, however Annual System is also recommended.
- House also finalized that universities where BEMS program has been launched, respective Vice Chancellors and Deans shall congregate biannually in a year to execute the recommendations of NCRC on HEC forum.
- All the members also recommended that prerequisite for the award of degree shall be passing of ten semesters or five professional years with one year house job in Eastern Medicine Hospital and prerequisite for new admission must be F.Sc premedical and equivalent determined by Inter Board Chairman Committee (IBCC).
- All the members also recommended that prerequisite for BEMS condensed course admission shall be F.Sc premedical with FTJ. Although if Inter Board Chairman Committee (IBCC) Islamabad, issues equivalent certificate to FTJ of Intermediate (FSC) then the respective candidate can be given admission 1<sup>st</sup> year BEMS.

- Final Year Project (F.Y.P) of 6 credits shall be the part of BEMS syllabus. A project shall be given to all the BEMS students in 9<sup>th</sup> semester and allowed to submit till the end of tenth semester or final year of annual system. Note: HEC may also provide funds, if possible.
- This was also suggested from the house that all the universities where BEMS program is operational, a senior person having qualification BEMS with Ph.D. (Eastern Medicine) shall be the head of the department of BEMS.

### **Objectives:**

- Quality education in health care systems is inevitable for human progress and prosperity. Compatibility of available qualified human resource with requisite scientific knowledge is again essential, both for providing general services on medical practitioners level and also for educational institutions as qualified teachers and researchers.
- We understand that purpose of all forms of health care systems including Traditional and Eastern/Unani Medicine, particularly is to support well-being of people, whether practicing in Pakistan or elsewhere. We also understand that efficacy of substances or drugs being used should have scientific base either developed with the support of modern technology or those which originate from natural resources like minerals, plants or animals and enjoy their established, time-tested and human-tested efficacy status as panaceas through centuries, and exhibit broader application and acceptance like the compound drugs (polyherbal/multicomponent – *Murakabaat*) in South Asia.
- For such and many other reasons, like national identity for the promotion of Eastern/indigenous/Unani substances and technology internationally and also to prevent any further loss of traditional knowledge (Eastern/Unani) which is generally inherited like genes, are required to be protected. This is with the intention to correct any neglect if observed on the part of the practitioners.
- It is for this reason that the degree programs at the levels of undergraduate and post-graduate have been designed. The curricula may not vary considerably from other similar programs of studies offered elsewhere in other systems including Allopathy, Complementary/Eastern/Unani as scientific advancements benefit all disciplines, but it is only the difference of philosophy and application which may distinguishes each system, the critical difference which matters!



# SUBJECTS

## BEMS

### FIRST PROFESSIONAL

#### First Semester

- i) Anatomy (TASHREEH-AL-BADAN)-I
- ii) Physiology (ILMUL-AFAAL)- I
- iii) Biochemistry (HAYATI-KIMYA)-I
- iv) Principles of Eastern Medicine (KULLIYAT-FIL-TIBB)-I
- v) History of Eastern Medicine (TAREEKH E-TIBB)-I
- vi) Islamic Studies/Ethics (ISLAMIAT/IKHLAQIAT)

#### Second Semester

- i) Anatomy (TASHREEH-AL-BADAN)-II
- ii) Physiology (ILMUL-AFAAL)-II
- iii) Biochemistry (HAYATI-KIMYA)-II
- iv) Principles of Eastern Medicine (KULLIYAT-FIL-TIBB)-II
- v) History of Eastern Medicine (TAREEKH E-TIBB)-II
- vi) Pakistan Studies (MUTALA-i-PAKISTAN)

### SECOND PROFESSIONAL

#### Third Semester

- i) Anatomy (TASHREEH-AL-BADAN)-III
- ii) Physiology (ILMUL-AFAAL)-III
- iii) Biochemistry (HAYATI-KIMYA)-III
- iv) Principles of Eastern Medicine (KULLIYAT-FIL-TIBB)-III
- v) Pharmacognosy (ADVIAH SHANASI)-I

#### Forth Semester

- i) Anatomy (TASHREEH-AL-BADAN)-IV
- ii) Physiology (ILMUL-AFAAL)-IV
- iii) Biochemistry (HAYATI-KIMYA)-IV
- iv) Principles of Eastern Medicine (KULLIYAT-FIL-TIBB)-IV
- v) Pharmacognosy (ADVIAH SHANASI)-II
- vi) Bioinformatics (HAYATIATI MALUMAT)

### THIRD PROFESSIONAL

#### Fifth Semester

- i) Pharmacy (DAWASAZI)-I
- ii) Pathology (ILMUL AMRAZ)-I
- iii) Materia Medica (ILMUL ADVIAH)-I
- iv) Pharmacognosy (ADVIAH SHANASI)-III
- v) (Medicine)-I Mualijat

- vi) Community Medicine (SAMAJI TIBB)

### **Sixth Semester**

- i) Pharmacy (DAWASAZI)-II
- ii) Microbiology & Parasitology (ILM-E-KHURD-HAYATIYAT)
- iii) Materia Medica (ILMUL ADVIAH)-II
- iv) Pharmacognosy (ADVIAH SHANASI)-IV
- v) (Medicine)-II Muallijat
- vi) Forensic Medicine & Toxicology (TIBB-E-QANOON-VA-ILMUL-SAMOOM)

## **FOURTH PROFESSIONAL**

### **Seventh Semester**

- i) Pathology (ILMUL AMRAZ)-II
- ii) Surgery (ILMUL-JARAHAT)-I
- iii) Materia Medica (ILMUL ADVIAH)-III
- iv) Gynaecology (ILMUL VILADAT-VA-AMRAZ-E-NISWAN)-I
- v) (Medicine)-III Muallijat
- vi) Clinical Psychology & Psychiatry (SARIRYATI ILMUL-NAFS WA AMRAZ-E-NAFSANIAH)

### **Eight Semester**

- i) Pathology (ILMUL AMRAZ)-III
- ii) Surgery (ILMUL-JARAHAT)-II
- iii) Materia Medica (ILMUL ADVIAH)-IV
- iv) Gynaecology (ILMUL VILADAT-VA-AMRAZ-E-NISWAN)-II
- v) (Medicine)-IV Muallijat

## **FINAL PROFESSIONAL**

### **Ninth Semester**

- i) Paediatrics (AMRAZ-E-ATFAL)-I
- ii) Ophthalmology (ILM UL AIN)
- iii) Obstetrics (ILMUL VILADAT-VA-AMRAZ-E-NISWAN)-I
- iv) Surgery (ILMUL-JARAHAT)-III
- v) Clinical Diagnostics (SARIRYATI TASHKHEES)-I
- vi) (Medicine)-V Muallijat
- vii) Final Year Project (F.Y.P.)

### **Tenth Semester**

- i) Paediatrics (AMRAZ-E-ATFAL)-II
- ii) ENT (AMRAZ-E-UZUN, ANAF VO HALAQ)
- iii) Obstetrics (ILMUL VILADAT-VA-AMRAZ-E-NISWAN)-II
- iv) Surgery (ILMUL-JARAHAT)-IV
- v) Clinical Diagnostics (SARIRYATI TASHKHEES)-II
- vi) (Medicine)-VI Muallijat

# SUBJECTS

## MPhil.

### Medicine (MUALIJAT)

#### FIRST YEAR

##### First Semester

- i) \*Principles of Medicine (KULLIYAT-FIL-TIBB)
- ii) \*Therapeutics (MUALIJAT)-I
- iii) \*Therapeutics (MUALIJAT)-II
- iv) Rational Phytotherapy (ILAJ-BIN-NABATAT)-I
- v) Internal Medicine (BATNI TIBB)-I

##### Second Semester

- i) \*Biostatistics (AL-AHSA AL-HAIWI)
- ii) \*Therapeutics (MUALIJAT)-III
- iii) \*Therapeutics (MUALIJAT)-IV
- iv) Rational Phytotherapy (ILAJ-BIN-NABATAT)-II
- v) Internal Medicine (BATNI TIBB)-II

#### Principle of Medicine (KULLIYAT-FIL-TIBB)

#### FIRST YEAR

##### First Semester

- i.) \*Principles of Medicine (KULLIYAT-FIL-TIBB)
- ii.) Humours in Health & Diseases (IKHLAT-FIL-SEHA-WA MARZ)-I
- iii.) Auxiliary Management of Diseases (ILAJ UL AMRAZ)-I
- iv.) \*Biostatistics (AL-AHSA AL-HAIWI)
- v.) \*Research Methodology (AL-BAHES-ILMI)

##### Second Semester

- i.) Fundamental of Temperament (ASSASIYAT-MIZAJ)
- ii.) Humours in Health & Diseases (IKHLAT-FIL-SEHA-WA MARZ)-II
- iii.) Auxiliary Management of Diseases (ILAJ UL AMRAZ)-II
- iv.) \*Scientific Writing (AL-KITABA-ILMIA)
- v.) \*Epidemiology (ILMUL-UOBIA)

#### Obstetrics and Gynaecology (ILMUL-VILADAT-VA-AMRAZ-E-NISWAN)

#### FIRST YEAR

##### First Semester

- i.) \*Principles of Medicine (KULLIYAT-FIL-TIBB)
- ii.) Female Health Care (RIAYA SEHIA-LIL-UNSA)-I

- iii.) Infectious Gynecological Diseases (AMRAZ-E-NISWAH)-I
- iv.) Maternal and Child Health (SEHA-UM-WA-TIFL)
- v.) \*Epidemiology (ILMUL-UOBIA)

### **Second Semester**

- i.) \*Research Methodology (AL-BAHES ILMI)
- ii.) Female Health Care (RIAYA SEHIA-LIL-UNSA)-II
- iii.) Infectious Gynecological Diseases (AMRAZ-E-NISWAH)-II
- iv.) \*Biostatistics (AL-AHSA AL-HAIWI)
- v.) Uro Gynecological Disorder (AMRAZ-E-NISWAH-BOLIA)

## **Materia Medica (ILMUL-ADVIAH)**

### **FIRST YEAR**

#### **First Semester**

- i) \*Principles of Medicine (KULLIYAT-FIL-TIBB)
- ii) Principle of Drug Action (MABDA-AMAL-ADVIAH)
- iii) ANS & CNS Drugs (AMAL-ADVIAH-ALA-JIHAZ-ASBI)
- iv) Pharmacokinetics (ILMUL-AFAL-AL-ADVIAH)
- v) \*Biostatistics (AL-AHSA AL-HAIWI)

#### **Second Semester**

- i) \*Designing Clinical Research (TASMEM-BAHOS-SARIRIYAT)
- ii) Action of Simple Drugs (AFAL-UL-ADVIA MUFRIDAH)
- iii) Drugs of Animal & Mineral Origin (ADVIAH-MADNIA-WA-HAYWANIAH)
- iv) Endocrine Pharmacology & Therapeutics (AFAL-WA-AMAL-AL-GHUDAD)
- v) \*Computer Applications in Health Education (TATBIQAT-AL-HASOOB-FI-ILMUL-TIBBIA)

## **Community Medicine (SAMAJI TIBB)**

### **FIRST YEAR**

#### **First Semester**

- i) \*Principles of Medicine (KULLIYAT-FIL-TIBB)
- ii) Health Economic Evaluation (SEHAT-KI-IQTESADI-TASHKHEES)
- iii) Public Health Administration (AWAMI-SEHAT-KAY-INTEZAMI-UMOR)-I
- iv) Communicable and Occupational Disease Epidemiology (WABAI-AUR- PESHAWARANA-AMRAZ-SAY-MUTALIQ-ILMUL-UOBIA)-I
- v) \*Biostatistics (AL-AHSA AL-HAIWI)

#### **Second Semester**

- i) \*Designing Clinical Research (TASMEM-BAHOS-SARIRIYAT)

- ii) Epidemiology and Pharmacoepidemiology (ILMUL-UOBIA-WA-DAWAYA)
- iii) Public Health Administration (AWAMI-SEHAT-KAY-INTEZAMI-UMOR)-II
- iv) Communicable and Occupational Disease Epidemiology (WABAI-AUR- PESHAWARANA-AMRAZ-SAY-MUTALIQ-ILMUL-UOBIA)-II
- v) \*Computer Applications in Health Education (TATBIQAT-AL-HASOOB-FI-ILMUL-TIBBIA)

## **History of Medicine (TAREEKH-E-TIBB)**

### **FIRST YEAR**

#### **First Semester**

- i) \*Principles of Medicine (KULLIYAT-FIL-TIBB)
- ii) Brief review of History of Medicine; eminent physician
- iii) Introduction of medical literature in Europe
- iv) Historical Perspectives of Medicine. The list of translators from Arabic to Latin; the School of Salerno
- v) \*Biostatistics (AL-AHSA-AL-HAIWI)

#### **Second Semester**

- i) \*Scientific Writing (AL-KITABA-ILMIA)
- ii) Medicine in the Muslim Period; eminent physicians, institutions and their contributions
- iii) Introduction of medicine in the Indo-Pak sub-continent; the progress of medicine in the Islamic periods of the sub-continent
- iv) Medicine during the British period; eminent men of Medicine in the sub-continent
- v) \*Computer Applications in Health Education (TATBIQAT AL-HASOOB-FI-ILMUL TIBBIA)

## **Phytomedicine (TIBB AL-A'ASHAAB-AL-NABATIAT)**

### **FIRST YEAR**

#### **First Semester**

- i) \*Principles of Medicine (KULLIYAT-FIL-TIBB)
- ii) \*Drugs of Natural Origin (QUDRATI ADVIA)
- iii) Common Unani Drugs for Specific Ailments-I
- iv) Phytochemistry (NABATAT KA KIMY-E-TAJZIA)
- v) \*Biostatistics (AL-AHSA AL-HAIWI)

## **Second Semester**

- i) Principles and Practices of Drug Development (MUBADI WA MUMARSAT- ADVIA)
- ii) Contemporary Use of Herbal Drugs in Eastern Medicine
- iii) Common Unani Drugs for Specific Ailments-II
- iv) \*Computer Applications in Health Education (TATBIQAT-AL-HASOOB-FI-ILMUL-TIBBIA)
- v) \*Designing Clinical Research (TASMEM-BAHOS-SARIRIYAT)

## **Ethnomedicine (AL-TIBB AL-ARQI)**

### **FIRST YEAR**

#### **First Semester**

- i) \*Principles of Medicine (KULLIYAT-FIL-TIBB)
- ii) Medicinal Plants & Alternative Medicine (TIBBI-NABATAT-AUR MUTABADIL-TIBB)-I
- iii) Medicinal Plants & Phytochemical Investigation (TIBBI-NABATAT-AUR KIMYAI-TASHKHES)
- iv) Ethnomedicine in Different Culture Areas
- v) \*Biostatistics (AL-AHSA AL-HAIWI)

#### **Second Semester**

- i) Ethnomedicine in Contemporary Medicine
- ii) Medicinal Plants & Alternative Medicine (TIBBI-NABATAT-AUR MUTABADIL-TIBB)-II
- iii) Bioassay Techniques
- iv) \*Product Development (Eastern Medicine)
- v) \*Research Methodology (AL-BAHES ILMI)

## **Rational Phytotherapy (ILAJ BIN NABATAT)**

### **FIRST YEAR**

#### **First Semester**

- i) \*Principles of Medicine (KULLIYAT-FIL-TIBB)
- ii) Introduction to Medicinal Plants & Materia Medica
- iii) Traditional View of Phytotherapy Active Constituents & Pharmacology
- iv) Dosage and Preparation of Phytomedicine
- v) \*Biostatistics (AL-AHSA AL-HAIWI)

#### **Second Semester**

- i) \*Therapeutically effective drugs for Specific Disorders (of Pharmacological Groups)

- ii) Pharmacologically Effective Unani Drugs ((Ibn-e-Sina, Razi, Kabiruddin & others)
- iii) Microbial Resistance and Immunity Boosting Drugs
- iv) Development of Unani Herbal Teas and different Dosage Forms
- v) \*Research Methodology (AL BAHES ILMI)

## **SUBJECTS**

**PhD.**

### **Medicine (MUALIJAT)**

**FIRST YEAR**

#### **First Semester**

- i) \*Advance Studies in Principles of Medicine-I
- ii) \*Computer Applications in Health Education (TATBIQAT AL-HASOOB FI TIBBI TALEEM)
- iii) Gastroenterology (AMRAZ-UL-HAZM)
- iv) Biostatistics (Al-Ahsa Al-Haiwi)
- v) Fundamentals of Clinical Investigation (ASSASIYAT TASHKEES AL-SARIRIYAT)

#### **Second Semester**

- i) \*Advance Studies in Principles of Medicine-II
- ii) Contemporary Practice of Drug Development
- iii) Principle of Pharmacology (MUBADI ILM-UL-SAIDALA)
- iv) \*Designing Clinical Research (TASMEM AL-BAHOS AL-SARIRIYAT)
- v) Contemporary Issues in Health Promotion (AL-QADAYA AL-MAOSARA-FI- NIMO SEHA)

### **Internal Medicine (BATNI TIBB)**

**FIRST YEAR**

#### **First Semester**

- i) \*Advance Studies in Principles of Medicine
- ii) Advance Concepts in Respiratory disorders
- iii) Advance concepts in Gastrointestinal disorders
- iv) Advance concepts in Immunology
- v) \*Biostatistics

#### **Second Semester**

- i) \*Computer Applications in Health Education
- ii) Advance concepts in CVS Disorders
- iii) Advance concepts in UGS disorders
- iv) Endocrinology
- v) \*Designing Clinical Research

## **Biochemistry (HAYATI KIMYA)**

### **FIRST YEAR**

#### **First Semester**

- i) \*Advance Studies in Principles of Medicine
- ii) Cell Biochemistry
- iii) Protein Chemistry
- iv) Enzymology
- v) \*Biostatistics

#### **Second Semester**

- i) \*Computer Applications in Health Education
- ii) \*Designing Clinical Research
- iii) Chemistry of Respiration
- iv) Biochemistry of Liver & Kidney
- v) Endocrinology

## **Physiology (ILMUL AFAL)**

### **FIRST YEAR**

#### **First Semester**

- i) \*Advance Studies in Principles of Medicine
- ii) Cell & Nerve Muscle Physiology
- iii) Neurophysiology
- iv) \*Designing Clinical Research
- v) Body Fluids, Renal Physiology

#### **Second Semester**

- i) \*Computer Applications in Health Education
- ii) Endocrinology
- iii) Blood Cardiovascular & Respiratory Physiology
- iv) \*Biostatistics
- v) GIT Physiology

## **Clinical Pathology & Microbiology (ILMUL-AMRAZ-VA-ILM-E-KHURD-HAYATIYAT)**

### **FIRST YEAR**

#### **First Semester**

- i) \*Concepts of Pathology in Unani Medicine
- ii) Fundamentals of Immunology
- iii) Medical Bacteria & Fungi
- iv) Cellular Basis of Disease
- v) \*Biostatistics

#### **Second Semester**

- i) \*Designing Clinical Research
- ii) Biology of Viruses



- iii) Molecular & Cellular Microbiology
- iv) Microbiological Diagnosis
- v) \*Computer Applications in Health Education

## **Materia Medica (ILMUL-ADVIAH)**

### **FIRST YEAR**

#### **First Semester**

- i) \*Advance Studies in Principles of Medicine
- ii) Principle of Drug Action
- iii) ANS & CNS Drugs
- iv) Pharmacokinetics and pharmacodynamics of Eastern Medicine  
Drugs
- v) \*Biostatistics

#### **Second Semester**

- i) \*Designing Clinical Research
- ii) Metabolism of Eastern Medicine drug
- iii) Drugs of Animal & Mineral Origin
- iv) Endocrine Pharmacology & Therapeutics
- v) \*Computer Applications in Health Education

# CURRICULUM FOR BEMS and Credit Hours

BEMS 5 year program and one year house job

## Topic:-

Page No.

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## SCHEME OF STUDIES FOR BEMS AND CREDIT HOURS

### BEMS FIRST PROFESSIONAL

Couse Code	Course No	First Semester	Credit Hours
ANA	111	Anatomy-I	3+1
PHY	112	Physiology-I	3+1
BIO	113	Biochemistry-I	3+1
PEM	114	Principles of Eastern Medicine-I	3+1
HEM	115	History of Eastern Medicine-I	3
ISE	116	Islamic Studies/Ethical Behaviour	3
Total Course 6			18+4

Couse Code	Course No	Second Semester	Credit Hours
ANA	121	Anatomy-II	3+1
PHY	122	Physiology-II	3+1
BIO	123	Biochemistry-II	3+1
PEM	124	Principles of Eastern Medicine-II	3+1
HEM	125	History of Eastern Medicine-II	3
PAS	126	Pakistan Studies	3
Total Course 6			18+4

**Total: Credit Hours: 44**

## BEMS Second Professional

Couse Code	Course No	Third Semester	Credit Hours
ANA	231	Anatomy-III	3+1
PHY	232	Physiology-III	3+1
BIO	233	Biochemistry-III	3+1
PEM	234	Principles of Eastern Medicine-III	3+1
PHS	235	Pharmacognosy-I	3+1
Total Course 5			15+5

Couse Code	Course No	Fourth Semester	Credit Hours
ANA	241	Anatomy-IV	3+1
PHY	242	Physiology-IV	3+1
BIO	243	Biochemistry-IV	3+1
PEM	244	Principles of Eastern Medicine-IV	3+1
PHS	245	Pharmacognosy-II	3+1
BIT	246	Bioinformatics	3+1
Total Course 6			18+6

**Total Credit Hours: 44**

## BEMS THIRD PROFESSIONAL

Couse Code	Course No	Fifth Semester	Credit Hours
PHP	351	Pharmacy-I	3+1
PAT	352	Pathology-I	3+1
MTM	353	Materia Medica-I	3+1
PHS	354	Pharmacognosy-III	3+1
MED	355	Mualijat (Medicine)-I	3+1
COM	356	Community Medicine	3+1
Total Course 6			18+6

Couse Code	Course No	Six Semester	Credit Hours
PHP	361	Pharmacy-II	3+1
MIC	362	Microbiology and Parasitology-II	3+1
MTM	363	Materia Medica-II	3+1
PHS	364	Pharmacognosy-IV	3+1
MED	365	Mualilat (Medicine)-II	3+1
FMT	366	Forensic Medicine and Toxicology	3+1
Total Course 6			18+6

**Total: Credit Hours: 44**

### BENS Fourth Professional

Couse Code	Course No	Seventh Semester	Credit Hours
PAT	471	Pathology-II	3+1
SUR	472	Surgery-I	2+1
MTM	473	Materia Medica-III	3+1
GOS	474	Gynecology-I	2+1
MED	475	Mualijat (Medicine)-III	3+1
PSY	476	Clinical Psychology and Psychiatry	3+1
Total Course 6			16+6

Couse Code	Course No	Eighth Semester	Credit Hours
PAT	481	Pathology-III	3+1
SUR	482	Surgery-II	2+1
MTM	483	Materia Medica-IV	3+1
GOS	484	Gynecology-I	2+1
MED	485	Mualijat (Medicine)-III	3+1
Total Course 5			13+5

**Total Credit Hours: 40**

### BENS Final Professional

Couse Code	Course No	Ninth Semester	Credit Hours
PED	591	Pediatrics-I	2+1
OPT	592	Ophthalmology	2+1
OBS	593	Obstetrics-I	2+1
SUR	594	Surgery-III	2+1
CLD	595	Clinical Diagnostics-I	3+1
MED	596	Mualijat (Medicine)-V	3+1
		Final Year Project (F.Y.P)	6
Total Course 6			20+6

Couse Code	Course No	Tenth Semester	Credit Hours
PED	5101	Pediatrics-II	2+1
ENT	5102	ENT	2+1
OBS	5103	Obstetrics-II	2+1
SUR	5104	Surgery-IV	2+1
CLD	5105	Clinical Diagnostics-II	3+1
MED	5106	Mualijat (Medicine)-VI	3+1
Total Marks/Total Course 6			14+6

**Total Credit Hours: 46**

**Total Credit Hours for five year: 222**

# DETAILS OF COURSE CONTENTS

## 1<sup>st</sup> and 2<sup>nd</sup> Semester, BEMS First Professional

Couse Code	Course No	First Semester	Credit Hours
ANA	111	Anatomy-I	3+1
PHY	112	Physiology-I	3+1
BIO	113	Biochemistry-I	3+1
PEM	114	Principles of Eastern Medicine-I	3+1
HEM	115	History of Eastern Medicine-I	3
ISE	116	Islamic Studies/Ethical Behaviour	3
Total Course 6			18+4

Couse Code	Course No	Second Semester	Credit Hours
ANA	121	Anatomy-II	3+1
PHY	122	Physiology-II	3+1
BIO	123	Biochemistry-II	3+1
PEM	124	Principles of Eastern Medicine-II	3+1
HEM	125	History of Eastern Medicine-II	3
PAS	126	Pakistan Studies	3
Total Course 6			18+4

**Total: Credit Hours: 44**

### FIRST SEMESTER

**ANA-111 Anatomy-I (Theory)** علم الابدان علم تشريح (علمی)  
**Semester-I, (Credit Hours 3+1)**

**A. GENERAL ANATOMY** تشريح عمومی

- Brief History of Anatomy-** Different Disciplines of the Subject.
- Anatomical Nomenclature-** Descriptive Terms اصطلاحات .
- Skeletal system-**

- Bones:** Axial skeleton بيكل محوری, Appendicular skeleton بيكل الحاقی, Functions of bone افعال عظمی, Classification درجات on the basis of shape, development, region and structure, General concepts of development and ossification تعظم عظمی of bones, Parts of young bone, Blood supply of long bone, Applied Anatomy of bones
- Joints** مفاصل: 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.

**B. GROSS ANATOMY**  
**UPPER LIMBS** بالائی اطراف  
**THORAX** صدر

**C. GENERAL HISTOLOGY** عمومی علم النسیجہ

1. **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.
2. **Microscopy**
3. **Cell:** Cell as a whole, Cell membrane, Interior of cell, Nucleus
4. **Epithelial Tissues**
5. **Connective Tissue Proper**

**D. GENERAL EMBRYOLOGY** علم الجنین عمومی

1. **Male and female reproductive system** تناسل system
2. **Cell division and Gametogenesis** خلوی تقسیم
3. **Fertilization, cleavage, blastocyst formation and implantation**
4. **Development during second week**
5. **Development during third week**

**ANATOMY-I (PRACTICAL)** علم الابدان علم تشریح (عملی)

1. Demonstration/ Dissection of upper limb
2. Demonstration /Dissection of thoracic viscera
3. Preparation of tissue (Staining of tissues, slide preparations and microscopy)

**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. Gray's Anatomy: **The Anatomical Basis of Clinical Practice**. Elsevier Limited (2008).
2. J.G. Romanes. London **Cunningham's Textbook of Anatomy**. Oxford University Press (2007).
3. Snell, R.S. **Clinical Anatomy**, Boston, Little, Brown and Company (2012).
4. Keith L. More and T.V.N. Persaud, Philadelphia, **Clinically Oriented Human Anatomy**. W.B. Saunders (2011).
5. Nzeeruddin Ahmed, **Tashreh Moalijeem**, Qarreol Bagh, Delhi (1933).
6. Syed Muhammad Kamaluddin Hamdani, **Tashreh Hamdani**, Urdu Bazar, Lahore (1975).
7. Mohammed Saeed, **Kitabul Abadan**, Bait-al-Hikmat, Karachi (1993).
8. Nazeruddin Ahmed, **Tashreeh Moalijeem**, Part 1, Bhawalpur Govt., Tibbiya College, Bahawalpur (1965).

## PHY-112 Physiology-I (Theory) [علم الافعال I- (علمی)]

Semester-I, (Credit Hours 3+1)

### General Physiology/Cell (علم الافعال عمومی/خلیہ)

Functional organization of human body, Homeostasis, Control system in the body, Cell organelles, Cell membrane and its functions (غشاء الخلیہ اور اس کے افعال), Intracellular connections, Transport through cell membrane, Introduction to molecular genetics.

### Blood (دم / خون)

Composition and general functions (اجزاء اور عمومی افعال), Plasma (سیال دموی), Red blood cells (کریات احمر), Hemoglobin, White blood cells (کریات ابیض), Platelets (انجمادی خلیے), Hemostasis, Blood Groups, Blood transfusion and Complications (نقل الدم اور اس کے عوارضات), Reticuloendothelial system (درحلمی شبکی نظام)

### Nerve and Muscle (عصب و عضلہ)

Physiology of action potential, Conduction of nerve impulse, Structure of Muscle, Skeletal muscle contraction, Isometric and isotonic contraction, Smooth muscle contraction, Neuromuscular transmission, Excitation contraction coupling, Motor unit

### Physiology-I (Practical) علم الافعال-I (عملی)

#### 1. Skills Development

- To lay down the guidelines for understanding the principles of the function of the human body with emphasis on clinical and practical applications
- To emphasize the importance of physiological concepts, measurements and experimental work of clinical application

#### 2. Study of microscope and its Parts (خوردبین)

3. **Hematology:** Hemoglobin (Hb) Percentage Estimation, Erythrocyte sedimentation rate (ESR), Bleeding time (BT), Clotting time (CT), Blood Groups, Study of Neubauer Chamber, RBC's Count, WBC's Count (TLC), Differential leucocyte Count (DLC). All will be performed in lab.

**Note: Tibbi Terminology in the relevant language will be taught.**

### Recommended Books:

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

## **BIO-113 Biochemistry-I (Theory)**

### **Semester-I, (Credit Hours 3+1)**

1. **Introduction to Biochemistry**(حيات الكيمياء)
2. **Biochemistry of Cell**(خلیاتی حیات الكيمياء): 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**(نشاسته): Definitions, biochemical nutritional importance 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**(الحميات): 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, Electrophoresis, Chromatography, Centrifugation, Immunoglobulin and its biomedical significance, Plasma proteins and their clinical significance.
6. **Porphyry and Hemoglobin**(رنگ دار نامیاتی مرکب): Chemistry and biosynthesis of porphyries and its disorders, Structure, functional nutritional importance 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
7. **Vitamins** (حياتين): Introduction classification, Chemistry biochemical functions deficiency manifestations recommended daily allowances and sources water soluble and fat soluble vitamins, Hypervitaminosis.

### **Biochemistry-I (Practical)**

1. Basic techniques and fundamental information.
2. Preparation and standardization of solutions –
3. Experiments on Carbohydrate – Qualitative Analysis
4. Experiments on Proteins – Qualitative Analysis

### **Recommended Books:**

1. Lippincott's Illustrated Review.



2. Biochemistry, Richard Harvey, Denise R. Ferrier.
3. Biochemistry I and II Harper's Illustrated Biochemistry.
4. M. N. Chatterjea, **Medical Biochemistry**, Jaypee Brothers Medical Publishers, New Delhi.
5. Roberk Murray, Daryl K, Granner, Peter A. Mayes, Victor W. Rodwell **Harper Biochemistry**, Appleton and Lange, Lange Medical Publications, New York.
6. Albert L. Lehninger **Principles of Biochemistry**, CBS Publisher, Delhi.
7. Lubert Stryer, **Biochemistry**, W.H. Freeman and Company.
8. M. Waseem, **Hayati Keemya**, Vol. 1 and Vol.2, Urdu Science College, Karachi.
9. Pamela C. Champe, Richard A. Harvey **Illustrated Biochemistry**, J. Lippincott Company.
10. Jaypee manual of Biochemistry.

**PEM-114 Principles of Eastern Medicine-I (Theory) علم کلیات فی الطب**  
**Semester-I, (Credit Hours 3+1)**

1. **Eastern Medicine ( طب )**: Definition, Classification
2. **Principles of Medicine ( کلیات فی الطب )**: Definition, Classification
3. **Fundamental Principles ( امور طبیعہ )**: Definition
  - i. **Physis ( طبیعت )**
  - ii. **Elements ( ارکان )**: Definition, Theories, Four elements ( اركان اربعه ) i) Fire ( آگ ) ii) Air ( هوا ) iii) Water ( پانی ) iv) Earth ( مٹی ) and their characteristics, Modern elements in human body, Role of elements in cell formation.
  - iii. **Temperament ( مزاج )**: Definition, Classification, Temperament of equatorials (Regions) Temperament of human body according to sex and stages of age.
  - iv. **Humors (body fluids) ( اخلاط )**: Definition, Classification, Four humors; Blood ( دم ), Phlegm ( بلغم ), Bile ( صفراء ), Black Bile ( سوداء ), Types of Digestion, Nature and types of Humors, Origin of Humors and Classification.
  - v. **Organs ( اعضاء )**: Definition, Classification, Nature and types of bones and joints of the body, Muscles, Nerves (cranial, cervical, thoracic, lumbar, sacrum and coccyx), Arteries (general description) and Veins
  - vi. **Pneuma ( ارواح )**: Definition, Classification, Theories.
  - vii. **Forces/Faculties ( قوی )**: Definition, Classification, General description, Physical Faculty, Vital Faculty and Nervous Faculty
  - viii. **Functions ( افعال )**: Definition, Classification

**Principles of Eastern Medicine-I Clinical/Practical:**

- 1- Estimation of Temperament among the groups of students
- 2- Analysis of Hazm Madi, Mavi and Uroqi

### **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).

### **HEM-115 History of Eastern Medicine-I (TAREEKH-E-TIBB) Theory**

#### **Semester-I, (Credit Hours 3)**

1. Brief review of History of Eastern / Unani Medicine; eminent physician, Buqrat, Arastoo and Jalinoos.
2. Medicine in the Muslim Period; eminent physicians, institutions and their contributions. Adul Qasim Zahravi, Ibn Wafid, Ibn Julul, Ibn Al-Jazzar, Ibn Baytar, Ibn Rushd, Ibn Zohar, Moosa Bin Maimoon, Ibn-e-, Jabir Bin Hayan, Zakaria Razi, Ibn Nafees and Ibn Sina.

### **Recommended Books:**

1. Ibn Abi Usaybiyah, **Uyun-al-Anba fi Tabqat-al-Atibba** (Arabic), C.C. R.U.M., 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. S.A.R. 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, **Tibbul -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).

## **ISE-116 Islamic Studies/Ethical Behavior (Theory)** **Semester–I, (Credit Hours 3)**

### **Islamiyat:**

- Islam’s concept and perspective of life.
- The main pillars of Islam. The Arkan-e-Islam The Kalema-e-Tayyabah: Prayers (Namaz), Zakat, Roza, Haj.
- Tauheed according to Holy Quran.
- The fundamental faiths of Islam.
- Risalat-e-Mohammadi (Faith and Facts).
- Introduction to Holy Quran.
- Translations and explanations of ten Surat’s of Holy Quran.
- Surat-e-Al-Hijrah (Complete).
- Masnoon Dua’s (Azkar-e-Masnoona).
- Our relations with Last Prophet (Mohammad peace be upon him) and its basis.

### **Ethics and Behaviour:**

- Surat-e-Mohammadi.
- Behavior: The view of Islam and liking of Islam.
- Brotherhood, Equity, Toleration, Faithfulness, Truthfulness, The right path, Justice, Love and Sympathy with others, Rights of neighbors, Forgiveness, Respect and servitude towards parents, Discipline, Place of teachers, Honesty and trustworthy, Maintenance of family relationship, Social and National Unity, Discussion of above topics in light of Surat-e-Al-Hijrat.

### **Recommended Books:**

1. Khurshid Ahmed, **Islami – Nazriya-e-Hayat**, Urdu Bazar, Karachi (1994).
2. Abdul Qayyum Natiq, **Sirat-e-Mustaqim**, Tahir Sons, Karachi (1994).
3. Adil Islahi, **Islami Tarz-e-Fikr**, Apkar pk (2005)
4. Salhuddin Sani, **Uloom-e-Islamia**, Maktaba Yadgar (2005).

## SECOND SEMESTER

### ANA-121 Anatomy-II (Theory) (علمی) علم الابدان علم تشريح (علمی) Semester-II, (Credit Hours 3+1)

#### A. GENERAL ANATOMY تشريح عمومی

1. **Muscle (عضله):** 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.
2. **Cardiovascular (دوران خون) System:** Introduction to C.V.S., Types of circulation, Anastomosis
3. **Introduction to Lymphatic System** لمفاوی: Lymph node, Lymph capillary, Function.
4. **Nervous System** اعصابی نظام: Introduction to
  - a) C.N.S., Different parts of C.N.S. with their brief functions, Peripheral nervous system (cranial and spinal nerves) Introduction.
  - b) Autonomic (دوران خود) Nervous System: Introduction to parasympathetic and sympathetic nervous system.
5. **Skin and Fascia** جلد and لفافه: Skin, superficial and deep fascia, introduction
6. **Techniques to Study Anatomy:** Introduction to radiograph, Radio opaque media, Special X-ray techniques like Barium Meal, Angiography, Ultrasound, C.T.Scan and MRI.
7. **Embalming (تحنيط) and Museum Keeping**

#### B. LOWR LIMBS زیریں اطراف

#### C. GENERAL HISTOLOGY علم النسيجه عمومی

1. Cartilage غضروف
2. Bone عظم
3. Muscular Tissue عضلانی نسيجه
4. Nervous Tissue اعصابی نظام and Nervous System: The nervous system, Cerebral cortex مخی قشر, Cerebellar cortex مخیخی قشر, Spinal cord حرام مغز
5. Lymphatic System لمفاوی اعضا
6. Circulatory System دوران خون
7. Integumentary System جلد
8. Routine Histological Techniques

#### D. GENERAL EMBRYOLOGY علم الجنين عمومی

1. Embryonic period
2. Fetal period
3. Fetal membrane (amniotic cavity, yolk sac, allantois, umbilical cord and placenta)

### Anatomy-II (Practical)

1. Dissection / Demonstration of lower limb

**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 (2007).
2. Gray's Anatomy: **Descriptive and Applied**. London, Longmans (2008).
3. J.G. Romanes. London **Cunningham's Textbook of Anatomy**. Oxford University Press (2005).
4. Snell, R.S. **Clinical Anatomy**, Boston, Little, Brown and Company (2012).
5. Keith L. More and T.V.N. Persaud, Philadelphia, **Clinically Oriented Human Anatomy**. W.B. Saunders (2011).
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).

### **PHY-122 Physiology-II (Theory) (علم الافعال ل-ا) (علمی)** **Semester-II, (Credit Hours 3+1)**

#### **Digestive System (نظام بضم/ قنات معدی و معوی)**

Structure and general functions (ساخت اور عمومی افعال), Enteric nervous system, 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.

#### **Cardiovascular System (نظام قلب و عروق)**

Introduction to heart and circulation (قلب اور دوران خون کا تعارف), Physiology of cardiac muscle, Action potential in atrial and ventricular muscle, pace maker potential, Cardiac impulse; origin and propagation, Cardiac cycle various events, ECG and its interpretation, Arrhythmias, Functional types of blood vessels, Hemodynamics of blood flow, Local Control of Blood flow, Systemic circulation, Characteristics and control, Regulation of peripheral resistance, Arterial pulse Arterial blood pressure (short / long term Regulation), Cardiac output (regulation/measurement) Heart sound/murmurs, Venous return and its regulation Coronary circulation, Cardiovascular changes during exercise.

#### **Respiratory System (نظام تنفس)**

Organization/functions of respiratory tract, Function of lungs (respiratory and non-respiratory), Mechanism of breathing, Surfactant and compliance, Lung volumes and capacities, Dead space, Diffusion of gases, Ventilation/perfusion, Transport of oxygen in blood, Transport of CO<sub>2</sub> in blood, Regulation of respiration (Nervous/chemical), Abnormal breathing, Hypoxia-types and effects, Physiology of cyanosis, Respiratory changes during exercise.

## **Physiology-II (Practical) علم الافعال-(عملی)**

1. Study of laboratory equipments relevant to physiology.
2. Respiratory System:  
Clinical examination of chest, Measurement of pulmonary volume and capacities (Spirometry)

**Note: Tibbi Terminology in the relevant language will be taught.**

### **Recommended Books:**

1. Arthur C. Guyton, M.D, **Textbooks of Medical Physiology**, W.B. Saunders Company, Ninth edition, 1996.
2. William F.Ganong, **Review of Medical Physiology**, Prentice Hgall 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 – Dar,ul 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).

## **BIO-123 Biochemistry-II (Theory)**

### **Semester–II, (Credit Hours 3+1)**

1. **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.
2. **Lipids(شحمیات):** 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.
3. **Enzymes(خامرے):** 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.
4. **Biochemistry of Digestive Tract(حيات الكيمياء نظام بضم):** 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) Succes Entricus, Digestion and absorption of carbohydrates, proteins, nucleic acid and lipids.

- 5. Mineral and Trace Elements:** Classification and biochemical role; Macro minerals (Na, K, Ca, Cl, PO<sub>4</sub>), Micro minerals (Fe, Zn, Mg, Se, I, Cu, Cd, Mn).

### **Biochemistry-II (Practical)**

1. Experiments on Fats – Qualitative Analysis
2. Chemical Analysis of Urine
3. Chemical Analysis of Milk

### **Recommended Books:**

1. Lippincott's Illustrated Review.
2. Biochemistry, Richard Harvey, Denise R. Ferrier.
3. Biochemistry I and II Harper's Illustrated Biochemistry.
4. M. N. Chatterjea, **Medical Biochemistry**, Jaypee Brothers Medical Publishers, New Delhi.
5. Roberk Murray, Daryl K, Granner, Peter A. Mayes, Victor W. Rodwell **Harper Biochemistry**, Appleton and Lange, Lange Medical Publications, New York.
6. Albert L. Lehninger **Principles of Biochemistry**, CBS Publisher, Delhi.
7. Lubert Stryer, **Biochemistry**, W.H. Freeman and Company.
8. M. Waseem, **Hayati Keemya**, Vol. 1 and Vol.2, Urdu Science College, Karachi.
9. Pamela C. Champe, Richard A. Harvey **Illustrated Biochemistry**, J. Lippincott Company.
10. Jaypee manual of Biochemistry.

### **PEM-124 Principles of Eastern Medicine-II (Theory) Semester-II, (Credit Hours 3+1)**

1. *States of Body ( احوال بدن ) : Definition and Classification. Definition of Health, Disease and Intermediate state (حالت ثالثه);  
Nomenclature*
2. Health and Diseases
  1. **Disease**
    - a. General description
    - b. Definition of cause
    - c. Disease
    - d. Symptom
    - e. States of body and patterns of disease
    - f. Diseases of structure
    - g. Diseases of continuity
    - h. Complex diseases
    - i. Other abnormalities
    - j. Stages of disease
  2. **Cause**
    - a. General description

- b. Effects of atmospheric changes
  - c. Temperamental characteristics of seasons
  - d. Seasonal changes and their laws
  - e. Fresh air
  - f. Seasonal abnormalities
  - g. Changes of weather (abnormal but not pathogenic)
  - h. Abnormal changes in atmosphere (injurious to health)
  - i. Effects of wind direction
  - j. Effects of habitat
  - k. Effects of rest and activity
  - l. Effects of sleep and wakefulness
  - m. Psychological factors
  - n. Effects of food and drinks
  - o. Description of Water
  - p. Effects of retention and depletion
  - q. Effects of baths and sunbaths
  - r. Special causes
3. **Etiology** ( علم الاسباب ): Definition, Classification, General causes, Six Essential Causes ( اسباب ستمه ضروريه ): Air ( هوا ), Foods and Drinks ( مأكولات و ), Movement and rest of body ( حركت و سکون بدنی ), Movement and rest of Pneuma ( Psychological activity ) ( نوم و ), Sleep and Awakens ( استنراغ و احتباس ), Non- Essential causes. ( يقظه , Elimination and retention )

### **Principles of Eastern Medicine II (Clinical/Practical)**

Evaluation of four temperaments by filling the teppramental charts

#### **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)**.



## **HEM-125 History of Eastern Medicine-II (TAREEKH-E-TIBB) Theory**

### **Semester–II, (Credit Hours 3)**

1. Introduction of medical literature in Europe; the list of translators from Arabic to Latin; the School of Salerno.
2. 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 Gillani, Hakim Muhammad Hasan Qarshi, Hakim Kabeer uddin, Hakim Abdul Hamid Dehlavi, Hakim Muhammad Said.

### **Recommended Books:**

1. Ibn Abi Usaybiyah, **Uyun-al-Anba fi Tabqat-al-Atibba** (Arabic), C.C. R.U.M., 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. S.A.R. 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, **Tibbul -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**, Hamdard Academi, pp.01-208 (1955).

## **PAS-126 Pakistan Studies (Compulsory)** **Semester-II (Credit Hours 3)**

### **Introduction/Objectives:**

- Develop vision of historical perspective, government, politics, contemporary Pakistan, ideological background of Pakistan.
- Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

### **Course Outline:**

#### **1. Historical Perspective**

- a. Ideological rationale with special reference to Sir Syed Ahmed Khan, Allama Muhammad Iqbal and Quaid-e-Azam Muhammad Ali Jinnah.
- b. Factors leading to Muslim separatism
- c. People and Land
  - i. Indus Civilization
  - ii. Muslim advent
  - iii. Location and geo-physical features.

#### **2. Government and Politics in Pakistan**

Political and constitutional phases:

- a. 1947-58
- b. 1958-71
- c. 1971-77
- d. 1977-88
- e. 1988-99
- f. 1999 onward

#### **3. Contemporary Pakistan**

- a. Economic institutions and issues
- b. Society and social structure
- c. Ethnicity
- d. Foreign policy of Pakistan and challenges
- e. Futuristic outlook of Pakistan

### **Recommended Books:**

1. Burki, Shahid Javed. *State & Society in Pakistan*, The MacMillan Press Ltd 1980.
2. Akbar, S. Zaidi. *Issue in Pakistan's Economy*. Karachi: Oxford University Press, 2000.
3. S. M. Burke and Lawrence Ziring. *Pakistan's Foreign policy: An Historical analysis*. Karachi: Oxford University Press, 1993.
4. Mehmood, Safdar. *Pakistan Political Roots & Development*. Lahore, 1994.

5. Wilcox, Wayne. *The Emergence of Bangladesh*, Washington: American Enterprise, Institute of Public Policy Research, 1972.
6. Mehmood, Safdar. *Pakistan Kayyun Toota*, Lahore: Idara-e-Saqafat-e-Islamia, Club Road, nd.
7. Amin, Tahir. *Ethno - National Movement in Pakistan*, Islamabad: Institute of Policy Studies, Islamabad.
8. Ziring, Lawrence. *Enigma of Political Development*. Kent England: Wm Dawson & sons Ltd, 1980.
9. Zahid, Ansar. *History & Culture of Sindh*. Karachi: Royal Book Company, 1980.
10. Afzal, M. Rafique. *Political Parties in Pakistan*, Vol. I, II & III. Islamabad: National Institute of Historical and cultural Research, 1998.
11. Sayeed, Khalid Bin. *The Political System of Pakistan*. Boston: Houghton Mifflin, 1967.
12. Aziz, K. K. *Party, Politics in Pakistan*, Islamabad: National Commission on Historical and Cultural Research, 1976.
13. Muhammad Waseem, *Pakistan Under Martial Law*, Lahore: Vanguard, 1987.
14. Haq, Noor ul. *Making of Pakistan: The Military Perspective*. Islamabad: National Commission on Historical and Cultural Research, 1993.

### 3<sup>rd</sup> and 4<sup>th</sup> Semester, BEMS Second Professional

Course Code	Course No.	Third Semester	Cr. Hr.
ANA	231	Anatomy-III	3+1
PHY	232	Physiology-III	3+1
BIO	233	Biochemistry-III	3+1
PEM	234	Principles of Eastern Medicine-III	3+1
PHS	235	Pharmacognosy-I	3+1
<b>Total Course 5</b>			<b>15+5</b>

Course Code	Course No.	Fourth Semester	Cr. Hr.
ANA	241	Anatomy-IV	3+1
PHY	242	Physiology-IV	3+1
BIO	243	Biochemistry-IV	3+1
PEM	244	Principles of Eastern Medicine-IV	3+1
PHS	245	Pharmacognosy-II	3+1
BIT	246	Bioinformatics	3+1
<b>Total Course 6</b>			<b>18+6</b>

**Total Credit Hours : 44**

## THIRD SEMESTER

**ANA-231 Anatomy-III (Theory)** (علم الابدان علم تشریح (علمی)  
**Semester-III (Credit Hours 3+1)**

**GROSS ANATOMY**(علم تشریح نظری)

**Abdomen(بطن), Pelvis and Perineum:** Osteology: (Lumbar Vertebrae, Sacrum, and Bony Pelvis), Ant: Abdominal wall, Male external genital organ, Abd: part of oesophagus, Stomachمعدة, Intestinesامعاء, 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,(مجرى البول) Female reproductive organs, Male reproductive organs, Rectumمستقيم and Anal canal, Surface Marking, Radiology.

**Embryology:** (علم الاجنة)

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:** (علم الاجنة خاص)

Skeletal Systemنظام استخوان, Muscular Systemعضلات, Body Cavities and Serous Membranes, Cardiovascular System, Respiratory System.

## HISTOLOGY علم النسيجه

G.I.T.; Tongue لسان, Esophagus, Stomach معدة, Duodenum, Jejunum صائم, Ileum, Appendix زائد آورد, Large intestine, Rectum مستقيم, Anal Canal, Liver, كبد, Gall Bladder مراره, Pancreas بانقراس, Parotid gland, Sub mandibular gland, Sub Lingual gland).

## ANATOMY-III (PRACTICAL) علم تشريح (عملي)

1. Demonstration /Dissection of Abdominal Viscera (بطني احشا)
2. Demonstration /Dissection of Pelvic Viscera (حوضي احشا)

**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 (2007).
2. Gray's Anatomy: **The Anatomical Basis of Clinical Practice**. Elsevier Limited (2008).
3. J.G. Romanes. London **Cunningham's Text book of Anatomy**. Oxford University Press (1996).
4. Snell, R.S. **Clinical Anatomy By Regions**, Boston, Little, Brown and Company (2012).
5. Keith L. More and T.V.N. Persaud, Philadelphia, **Clinically Oriented Human Anatomy**. W.B. Saunders (2010).
6. Nzeeruddin Ahmed, **Tashreh Moalijeem**, Qarreol Bagh, Delhi (1933).
7. Syed Muhammad Kamaluddin Hamdani, Tashreh Hamdani, Urdu bazaar, Lahore (1957)
8. Mohammed Saeed, **Kitabul Abadan**, Bait-al-Hikmat, Karachi (1993).
9. Nazeruddin Ahmed, **Tashreeh Moalijeem**, Part 1, Bhawalpur Govt., Tibbiya College, Bahawalpur (1965).

## PHY-232 Physiology-III (Theory) (علم الافعال)

### Semester-III, (Credit Hours 3+1)

#### **Body Fluids and Kidneys** (رطوبات)

(بدن و كليہ)

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 regulating factors	
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  
Hormones of kidney  
Acidification of urine  
Acid base balance

Nephrotic syndrome

Artificial kidney/Hemodialysis  
Metabolic acidosis/Alkalosis

Micturition

Abnormalities of micturition including incontinence

**Endocrinology ( علم الغدد غيرناقله )**

General principles (classification, mechanism of action feed back control)

Acromegaly, Giantism

Biosynthesis, transport, metabolism, actions and control of secretion of hormones

Hormonal assay

Hypothalamus  
Anterior pituitary

Dwarfism  
Panhypopituitarism, Sheehan's syndrome

Posterior pituitary  
Thyroid gland, Parathyroid, calcitonin

Diabetes insipidus  
Myxoedema, Cretinism, thyrotoxicosis, Pheochromocytoma  
Syndrome of inappropriate ADH secretion, Cushin's syndrome, Conn's syndrome ,Addision's disease

Adrenal medulla, Adrenal cortex

Diabetes Mellitus and Hypoglycemia

Pancrease

GIT  
Pineal gland  
Thymus  
Kidney  
Physiology of growth

Adrenogenital syndrome  
Zollinger Ellison's syndrome

**Reproduction ( نظام توليد و تناسل )**

Functional anatomy of Male reproductive system  
Spermatogenesis  
Semen analysis  
Erection and ejaculation  
Testosterone  
Male puberty

Oogenesis and functional anatomy  
of female gonads  
Oestrogen and progesterone  
Menstrual cycle  
Puberty and menopause  
Pregnancy- Physiological changes  
in mother during pregnancy  
Placenta  
Parturition  
Lactation  
Neonatal Physiology

### **Physiology-III (Practical)**

1. Urine Examination: Physical, Chemical and Microscopic
2. Demonstration of Ultrasound Kidney Ureter Bladder KUB
3. Fasting Blood Sugar FBS
4. Random Blood Sugar RBS
5. Pregnancy Test

### **Cardiovascular System**

1. Cardiopulmonary resuscitation
2. Examination of arterial pulse
3. ECG recording/interpretation
4. Measurement of arterial blood pressure
5. Effect of exercise and posture on BP
6. Examination of Apex Beat,
7. Heart Sounds' auscultation of normal sounds/murmurs.

### **Recommended Books:**

1. Arthur C. Guyton, M.D, **Text Book of Medical Physiology**, W.B. Saunders Company, Ninth edition, (1996).
2. William F.Ganong , **Review of Medical Physiology**, Prentice Hgall 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, **Munafa-ul-Aaza**, Muktab- i – Dar,ul Talifat, (1987).
6. Iqtidar-ul-Hassan Zaidi and Mohammad Zul Kafil, **Munafa-ul-Aaza**, Saba publishers Aligarh, (1998).
7. Khalid Zaman Khan, **Afaal -ul – Aaza**, Ajaz publishing House Delhi, (1996).

**BIO-233 Biochemistry-III (Theory) (الكيمياء الحيوية)**  
**Semester-III, (Credit Hours 3+1)**

1. **Introduction to Metabolism**(استحاله)
2. **Metabolism of Carbohydrates**(استحاله نشاسته)  
**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 anaplerotic 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.
3. **Metabolism of Proteins and Amino Acids**(استحاله لحميات): 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.
4. **Integration and Regulation of Metabolic Pathways in Different Tissues**
5. **Nutrition** (التغذية): **Caloric requirement of the body, Balanced diet, Protein Energy Malnutrition**; Marasmus, Kwashiorkor, Marasmic – kwashiorkor, **Nutritional requirements in**; Pregnancy, Lactation, Newborn, In nutritional disorders

**Biochemistry-III (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. Estimation of Cholesterol and Protein in Blood.

**Recommended Books:**

1. Lippincott's Illustrated Review.
2. Biochemistry, Richard Harvey, Denise R. Ferrier.



3. Biochemistry I and II Harper's Illustrated Biochemistry.
4. M. N. Chaterjea, **Medical Biochemistry**, Jaypee Brothers Medical Publishers, New Delhi.
5. Roberk Murray, Daryl K, Granner, Peter A. Mayes, Victor W.Rodwell **Harper Biochemistry**, Appleton and Lange, Lange Medical Publications, NewYork.
6. Albert.L. Lehninger **Principles of Biochemistry**, CBS Publisher, Delhi.
7. Lubert Stryer, **Biochemistry**, W.H.Freeman and Company.
8. M. Waseem, **Hayati Keemya**, Vol. 1 and Vol.2, Urdu Science College, Karachi.
9. Pamela C.Champe, Richard A. Harvey **Illustrated Biochemistry**, J.Lippincot Company.
10. Jaypee manual of Biochemistry.

**PEM-234 Principles of Eastern Medicine-III (Theory) (کلیاتِ قانون)**  
**Semester–III, (Credit Hours 3+1)**

1. **Symptomatology**(علم العلامات): Definition, Classification, Symptoms of external and internal diseases, Symptoms (rules) for estimation of body temperament(تشخیص مزاج کے دلائل), Symptoms of Maltemperament/dysfunction of temperament(سوء مزاج), Symptoms of Plethora(امتلاء), Obstruction(سدہ), Gases(ریاح), Swelling(اورام), Loss of continuity.(تفرق اتصال).
2. **Pulse**(نبض): Definition, Conditions, 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.
3. **Urine**(قارورہ): Definition, Conditions, Points to be considered in the Examination of urine, Normal urine, Effect of age and sex on urine.
4. **Stool**(براز): Definition, Conditions, Points to be considered in the Examination of stool, Normal stool.

**Principles of Eastern Medicine-III (کلیاتِ قانون) (Practical)**

1. Estimation of Pulse on Unani Fundamentals
2. Estimation of Sue mizaj and filling of 20 proforma
3. Urine
  - General description
  - Colour of urine
  - Density and turbidity of urine, frothy urine
  - Odor of urine
  - Indication of sediments
  - Quantity of urine
  - Urine of different age limits and difference in gender
4. Stool
  - General description
  - Colour of stool
  - Odor of stool

- Indication of diseases

### 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).

### PHS-235 Pharmacognosy-I (Theory) (عقاقیر طبییة)

#### Semester–III, (Credit Hours 3+1)

1. **Introduction (تعارف):** Historical development and scope of Pharmacognosy (علم ادویہ) in Pakistan, Classification of crude drugs with special emphasis on chemical and therapeutic system, Terminologies.
2. **General Pharmacognosy (عمومی ادویہ شناسی):** *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. **Allergens (حساسیت) and Allergenic Preparation:** *Introduction, case history, irritancy, skin test, treatment of allergy, inhalant, ingestant, injectant, contactant, infectant and infestant allergens. Mechanism of allergy. Medicines used to treat Allergy: Cassia absus (چاکسو), Melia (نیم) azadirachta, Swertia cherata (چرائتہ), Smilax chinenses (چوب چینی), Smilax regelli (عشبه مغربی), Pterocarpus santalinus (صندل سرخ), Psoralea corylifolia (بابچی)*
4. **Enzymes (خامرے):** Enzymes obtained from plant source. (Phytoenzymes), Papain Bromelain and Malt Extract, Enzymes obtained from Animal source, Rennin pepsin, Pancreatin and pancreatic lipase.
5. **The study of the plant families yielding crude drugs:**

#### 6. Families

##### A. Ranunculaceae

#### crude drugs

*Aconitum heterophyllum* (اتیس), *Mercuric Chloride* (رسکپور), *Pulsatilla*, *Hydrastis Canadensis*.

##### B. Papaveraceae

*Sanguinaria*, *Papaver somnifera* (افیون)

<b>C. Leguminosae</b>	<i>Acacia arabica</i> (اقاقيا), <i>Glycyrrhiza glabra</i> (مليثي), <i>Cassia senna</i> (سناء مكى), <i>Cassia fistula</i> (املتاس), <i>Tamarindus indica</i> (املى)
<b>D. Umbelliferae</b>	<i>Foeniculum vulgare</i> (باديان), <i>Carum carvi</i> (زيره سياه)
<b>E. Apiaceae</b>	<i>Coriandrum sativum</i> (دهنيا), <i>Conium maculatum</i> (شوكران), <i>Ferula assafoetida</i> ..(حلتيت)
<b>F. Plantaginaceae</b>	<i>Digitalis pupura</i> .

### Medical Terminologies ( طبي اصطلاحات )

1. Corrosive (اكال)
2. Detergent (جالى)
3. Pruritis (حكه)
4. Caustic (كاوى)
5. Roughning (فخشن)
6. Concoctives (منضجات)
7. Sedative (مسكن)
8. Emollients (ملين)
9. Stimulant (محرک)
10. Tonics (مقويات)
11. Anaesthetic (مخدر)
12. Blood purifier (مصفى خون)
13. Exhilarant (مفرح)
14. Repercussive (راده)
15. Haemostatic (حابس الدم)
16. Digestive (باضم)
17. Hypnotics (منوم)
18. Carminative (كاسر رياح)
19. Deobstruent (مفتح سدد)
20. Dessicative (مجفف)
21. Expectorant (منفت بلغم)
22. Anti-spasmodic (دافع تشنج)
23. Anthelmintic (قاتل ديدان)
24. Anti-nauseatic (دافع غثيان)
25. Appetizer (مشتبهى)
26. Astringent (قابض)
27. Diaphoretic (معرق)
28. Emetic (مقى)
29. Lithotriptic (مفتت حصات)
30. Fattening (مسمن)
31. Resolvent (محلل)
32. Diuretic (مدر بول)
33. Gastric Tonic (مقوى معده)
34. Hepatic Tonic (مقوى كبد)
35. Brain Tonic (مقوى دماغ)

36. Nervine Tonic ( مقوی اعصاب )
37. Cardiac Tonic ( مقوی قلب )
38. Tonic for Vital Organs ( مقوی اعضاءے رئیسہ )
39. Viscous ( مغلظ )
40. Anti-inflammatory ( محلل اورام )
41. Glutinous ( مغری )
42. Mucilaginous ( لعاب دار )
43. Aphrodisiac ( مقوی باہ )
44. Alexipharmic ( تریاق )
45. Laxative ( مسہل خفیف )
46. Purgative ( مسہل قوی )
47. Galactagogue ( مدر شیر )
48. Phlegmatic Concoctive ( منضج بلغم )
49. Biliious Concoctive ( منضج صفرا )
50. Atrabilius Concoctive ( منضج سودا )
51. Anti-pyretic ( دافع حمیات )
52. Anti-tussive ( دافع سعال )

### Single / Simple Unani Medicine:

1. *Prunus domestica* ( آلو بخارا )
2. *Phyllanthus emblica* ( آملہ )
3. *Bombyx mori* ( ابریشم )
4. *Juniperus communis* ( اہبل )
5. *Aconitum heterophyllum* ( اتیس )
6. *Hyoscyamus niger* ( اجوائن خراسانی )
7. *Trachyspermum ammi* ( اجوائن دیسی )
8. *Strychnous nux vomica* ( اذاراقی )
9. *Cymbopogon jwarancusa* ( انڈر مکی )
10. *Ricinus communis* ( ارنڈ )
11. *Adhatoda vasica* Nees ( اڑوسہ )
12. *Valeriana wallichii* ( اسارون )
13. *Plantago ovata* ( اسپغول )
14. *Peganum harmala* ( اسپند )
15. *Rauwolfia serpentina* ( اسرول )
16. *Lavandula stoechas* ( اسطوخودوس )
17. *Withania somnifera* ( اسگند )
18. *Parmelia perlata* ( اشنہ )
19. *Saraca indica* ( اشوکا )
20. *Glycyrrhiza glabra* ( ملیٹھی )
21. *Cuscuta reflexa* ( افٹیمون )
22. *Artemisia absinthium* ( افسنتین )
23. *Papaver somniferum* ( افیون )
24. *Melilotus officinalis* ( اکلیل المک )
25. *Amomum subulatum* ( الانچی کلاں )
26. *Elettaria cardamomum* ( الانچی خورد )
27. *Abroma augusta* ( الٹ کمبل )
28. *Linum usitatissimum* ( النسی )

29. *Cassia fistula* (املتاس)
30. *Punica granatum* (انار)
31. *Polygonum bistorta* (انجبار)
32. *Ficus carica* (انجیر)
33. *Pimpinella anisum* (انیسون)
34. *Psoralea corylifolia* (بابچی)
35. *Matricaria chamomilla* (بابونہ)
36. *Volutarella divaricata* (باد آور)
37. *Nepeta hindostana* (بادرنجبویہ)
38. *Foeniculum vulgare* (بادیان)
39. *Embelia ribes* (باو پرنگ)
40. *Achillea millefolium* (برنجاسف)
41. *Viola odorata* (بنفشہ)
42. *Cydonia vulgaris /Seeds* (بہیدانہ)
43. *Cydonia vulgaris /Fruits* (بہیدانہ)
44. *Myrobalan bellirica* (بہیڑہ)
45. *Centaurea behen /Sufaid* (بہمن سفید)
46. *Salvia haematodes / Surkh* (سرخ بہمن)
47. *Aconitum ferox* (بیش)
48. *Aegle marmelos* (بیلگری)
49. *Pistacia vera* (پستہ)
50. *Adiantum capillus veneris* (پرسیاوشان)
51. *Mentha piperita* (پودینہ)
52. *Alum* (پٹھکری)
53. *Citrus* (ترنج)
54. *Operculina turpethum* (ترید)
55. *Ocimum basilicum* (تلسی)
56. *Tamarindus indica* (جھاو)
57. *Cheiranthus cheiri / Surkh* (تودری سرخ)
58. *Cheiranthus cheiri / Zard* (تودری زرد)
59. *Cinnamomum tamala* (تیزپات)
60. *Myristica fragrans / Jaiphal* (جانفل)
61. *Myristica fragrans / Jawatri* (جاوتری)
62. *Croton tiglium* (جمالگوٹھ)
63. *Castoreum* (جند بیدستر)
64. *Hordeum vulgare* (جو)
65. *Tamarix dioica* (جھاو)
66. *Cassia absus* (چاکسو)
67. *Swertia chirata* (چرانٹہ)
68. *Smilax china* (چوب چینی)
69. *Myrtus communis* (حب الاس)
70. *Lapis judaicus* (حجر الیہود)
71. *Ferula asafoetida* (حلتیت)
72. *Tribulus terrestris* (خارخسک)
73. *Sisymbrium irio* (خاکسی)
74. *Portulaca oleraceae* (خرفہ)
75. *Phoenix sylvestris* (کھجور)

76. *Malva sylvestris* (خبازی)
77. *Althaea officinalis* (خطمی)
78. *Prunus armeniaca* (خوبانی)
79. *Alpinia galanga* (خولنجان)
80. *Cucumis sativus* (خیارین)

### Pharmacognosy-I (Practical)

1. Introduction of the entire and broken parts of the plant drugs .(Macro and organoleptic characters)

### Recommended Books:

1. Hakim Abdul Hannan,Aftab Saeed,Tabiba Uzma Shafi,2013, **Text Book of Pharmacognosy and Materia Medica** (in Urdu).Faculty of Eastern Medicine,Hamdard University,Illustrations,pp 275+15.
2. V.E. Tyler, L.R. Brady and J.E.Robbers, **Pharmacognosy**, 9<sup>th</sup> Eds: Lea and Febiger,Philadelphia,1988.
3. G.E.Trease and W.C. Evans, **Pharmacognosy**, W.B.Saunders, Philedelphia, Toronto, 2002.
4. Michal Henrich, Fundamentals of **Pharmacognosy and Phytotherapy**, 4th: Lea and Febiger, Philadelphia, 2003.
5. H. Wagner, **Pharmazeutische Biologie**,Gustav Fischer Verlag, Stuttgart, (German Language), 1982.
6. **WHO Monographs on Selected Medicinal Plants**, Vol 1,World Health Organization, and Geneva, 1999.
7. Betty P-Jackson, **Atlas of Microscopy of Medicinal Plants, Culinary Herbs and Spices**, CBS Publishers, New Delhi, 2000.
8. **PDR for Herbal Medicines**, Medical Economics Company, Newq Jersey, Second Edition 2000.
9. Hson-Mou CHANG, Paul Pui Hay BUT, **Pharmacology and Application of Chinese Materia Medica**, Vol I and II, World Scientific Publishing cop (1983).
10. Iqbal Ahmad, Khan Usmanghani, **Analysis of Medicinal Compounds and Plant Drugs**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 165(2003).
11. Iqbal Azhar, Khan Usmanghani, **Essential Oils**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 324(2002).
12. K. Usmanghani, **Herbal Medicine Industry in Pakistan**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 225(2000).
13. Kamal Masood Adhami, Syed Waseemuddin Ahmad, Khan Usmanghani, **Drug Analysis on H.P.L.C.**, Department of Pharmacognosy, University of Karachi, Karachi, Pakistan, pp.271 (1999).
14. 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, pp. 151 (1997).
15. K.Usmanghani, **Researches on Materia Medica**, Department of Pharmacognosy, University of Karachi, pp. 775(1997).

16. K.Usmanghani, Aftab Saeed, Tanweer Alam, **Indusyunic Medicine**, Department of Pharmacognosy, University of Karachi, pp. 601 (1997).
17. K.Usmanghani, Simin Shameel, **Index of Herb Drugs of Pakistan**, Department of Pharmacognosy, University of Karachi, Karachi, pp. 304 (1996).
18. K.Usmanghani, **Biologically Active Alkaloids and Glycosides**, Hamdard Foundation, Pakistan, Karachi, pp. 155 (1989).
19. K.Usmanghani, W.Miki, G.Honda, **Herbal Drugs and Herbalist in Pakistan**, Tokyo University of Foreign Studies, Tokyo, Japan, pp. 281 (1986).
20. K.Usmanghani, **Topics in Pharmacognosy**, University Grants Commission Monograph Series, Islamabad, pp. 74 (1985).

## FOURTH SEMESTER

**ANA-241 Anatomy-IV (Theory)** (علم الابدان علم تشریح (علمی)  
**Semester-IV, (Credit Hours 3+1)**

**GROSS ANATOMY** (علم تشریح نظری)

**Head and Neck:** Osteology [Skull, (Articulated), Hyoid Bone عظم لامي, 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.

**Brain:** دماغ

**Has to be brief without going into deep details;** Meninges, Blood supply, Spinal cord (حرام مغز), Medulla oblongata. Pons, Cerebellum مخيخ, Mid brain, Cerebrum مخ with function, Ventricles of brain and CSF, Nuclei of Cranial nerves.

**Special Embryology:** (علم الجنين (خاص)

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

**SPECIAL HISTOLOGY** علم النسيجه خاص

**Respiration** (غضروف, Lung): نضام تنفس (Trachea)

**Urinary System:** (Kidney كليہ), (Ureter حالب, Urinary bladder مثانہ, Urethra)

**Glands:** (Thyroid, -Parathyroid, -Adrenal, Pituitary, Mammary)

**Reproduction:** (Testis خصيتين, Epididymis, Prostate, Ovary بيضه دائی, Uterus).

**Anatomy-IV (Practical)**

- Demonstration /Dissection of Head, Neck and Brain

**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 (2007).
2. Gray's Anatomy: **The Anatomical Basis of Clinical Practice**. Elsevier Limited (2008).
3. J.G. Romanes. London **Cunningham's Text book of Anatomy**. Oxford University Press (1996).
4. Snell, R.S. **Clinical Anatomy By Regions**, Boston, Little, Brown and Company (2012).
5. Keith L. More and T.V.N. Persaud, Philadelphia, **Clinically Oriented Human Anatomy**. W.B. Saunders (2010).
6. Nzeeruddin Ahmed, **Tashreh Moalijeem**, Qarreol Bagh, Delhi (1933).
7. Syed Muhammad Kamaluddin Hamdani, Tashreh Hamdani, Urdu bazaar, Lahore (1957)
8. Mohammed Saeed, **Kitabul Abadan**, Bait-al-Hikmat, Karachi (1993).
9. Nazeruddin Ahmed, **Tashreeh Moalijeem**, Part 1, Bhawalpur Govt., Tibbiya College, Bahawalpur (1965).

### **PHY-242 Physiology-IV (Theory)** **Semester-IV, (Credit Hours 3+1)**

#### **Nervous System ( نظام اعصاب )**

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	
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	
Motor pathways, Pyramidal and Extrapyramidal Tracts	Hemiplegia/Paraplegia
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
	Abnormalities of speech
Physiology of speech	
Thalamus-nuclei and functions	Thalamic syndrome
Hypothalamus limbic system	Lesion of Hypothalamus
Cerebrospinal fluid	Hydrocephalus
Autonomic nervous system	
Regulation of body temperature	
Functions of skin	
Physiology of aging	
<b>Special Senses ( خصوصى حواس )</b>	
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 cochlea	
Functions of external and middle Ear	
Functions of inner Ear-Organ of Corti	Hearing test audiometry
Auditory pathway	Types of deafness, Auditory evoked potentials
Physiology of smell-receptors and pathway	Olfaction/Taste abnormalities
Physiology of taste	

### Physiology-IV (Practical)

1. **Nervous System:** Examination of superficial reflexes, Examination of deep reflexes, Examination of sensory, motor system, Clinical examination of cranial nerve.

2. **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
3. **Cardiovascular System**
  - a. Examination of arterial pulse
  - b. ECG recording/interpretation
  - c. Measurement of arterial blood pressure
  - d. Effect of exercise and posture on BP
  - e. Examination of Apex Beat,
  - f. Heart Sounds' auscultation of normal sounds/murmurs.

### Recommended Books:

1. Arthur C. Guyton, M.D, **Text Book 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, **Munafa-ul-Aaza**, Muktab- i – Dar,ul Talifat, (1987).
6. Iqtidar-ul-Hassan Zaidi and Mohammad Zul Kafil, **Munafa-ul-Aaza**, Saba publishers Aligarh, (1998).
7. Khalid Zaman Khan, **Afaal -ul – Aaza**, Ajaz publishing House Delhi, (1996).

### BIO-243 Biochemistry-IV (Theory) (الكيمياء الحيوية)

Semester–IV, (Credit Hours 3+1)

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. **Metabolism of Lipids (استحاله شحميات): Mobilization and transport of fatty acids, triacylglycerol, and sterols, Oxidation of fatty acids;** Activation and transport of fatty acid in the mitochondria,  $\beta$ -oxidation, fate of Acetyl CoA, regulation of  $\beta$ -oxidation, Other types of oxidation, i.e. alpha-oxidation,  $\omega$ -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

- 3 **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
- 4 **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 dependent 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.
5. **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
6. **Biochemistry of Water and Electrolyte imbalance and Acid Base Balance**

#### **Biochemistry-IV (Practical):**

- Estimation of following in blood and urine:
  - a) Creatinine
  - b) Urea

#### **Recommended Books:**

1. Lippincott's Illustrated Review.
2. Biochemistry, Richard Harvey, Denise R. Ferrier.
3. Biochemistry I and II Harper's Illustrated Biochemistry.
4. M. N. Chatterjee, **Medical Biochemistry**, Jaypee Brothers Medical Publishers, New Delhi.
5. Robert Murray, Daryl K, Granner, Peter A. Mayes, Victor W. Rodwell **Harper Biochemistry**, Appleton and Lange, Lange Medical Publications, New York.
6. Albert L. Lehninger **Principles of Biochemistry**, CBS Publisher, Delhi.
7. Lubert Stryer, **Biochemistry**, W.H. Freeman and Company.

8. M. Waseem, **Hayati Keemya**, Vol. 1 and Vol.2, Urdu Science College, Karachi.
9. Pamela C.Champe, Richard A. Harvey **Illustrated Biochemistry**, J.Lippincot Company.
10. Jaypee manual of Biochemistry.

**PEM-244 Principles of Eastern Medicine-IV (Theory) (کلیاتِ قانون)**  
**Semester-IV, (Credit Hours 3+1)**

1. **Preservation of Health (علم حفظ صحت):** Introduction, Objectives, Why Death is unavoidable, Care in six essential causes, Exercise (ریاضت), Bath (حمام), Massage(دلك).
2. **Treatment/Therapeutics(علم العلاج):** Introduction and Classification, Treatment with Essential Causes / Regimental Therapy(علاج بالتدبير), Treatment with foods(علاج بالغذاء), Management in other essential causes.
3. **Treatment with Medicine،(علاج بالدواء):** Basic Principles, Law of Quality (قانون کیفیت), Law of Quantity(قانون كمیت), Law of Time(قانون وقت).
4. **Management of Dysfunction of Temperament(سوء مزاج كا اصولِ علاج):** Diversion (امالہ), Elimination(استفراغ); Definition, Objectives, Conditions, Types, Sources (Purgation(اسهال), Vomiting(قے), Venesection(فصد), Enema(حقنه), Leeching(تعليق), Cupping(حجامه), Line of treatment of Swelling(اورام), Pain (وجع)and Obstruction(سُده).
5. **Treatment with Hand / Surgery: Line of treatment of loss of continuity and Abscess, Cauterization(عمل می)**

**Principles of Eastern Medicine-IV (کلیاتِ قانون) (Practical):**

- 1) Study of cupping technique on twenty cases
- 2) Estimation of Pulse on Unani Fundamentals
- 3) Estimation of Sue mizaj and filling of proforma 20

**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).

**PHS-245 Pharmacognosy-II (Theory)**  
**Semester-IV, (Credit Hours 3+1)**

**1. The Study of the Plant Families Yielding Crude Drugs:**

	<b>Families</b>	<b>Crude Medicine</b>
A.	Apocynaceae	Rauwolfia, Catharanthus, Strophanthus
B.	Solanaceae	Atropa belladonna, Hyoscyamus, Stramonium , Capsicum
C.	Plantaginaceae/ Scrophulariaceae	Digitalis, Verbascum (Mullein)
D.	Lamiaceae	Peppermint, Thyme, Spearmint, Salvia, Ocimum.
E.	Amaryllidaceae / Colchicaceae / Xanthorrhoeaceae	Garlic, Colchicum, Aloe
F.	Zingiberaceae	Ginger, Curcuma

2. **Plant Growth Regulators:** General account with special reference to Auxins, Gibberellins Abscisic acid, Cytokinins and Ethylene.

3. **Poisonous Plants:** General introduction of poisonous plants with special reference to Pakistan.

4. **Pesticides:** Introduction. Methods of controlling pests with special reference to natural methods.

5. **Antioxidants:** Cucumber, Amla, Orange, Lemon etc.

**Pharmacognosy-II (Practical)**

1. Microscopic examination of powders and sections of plant drugs.

2. Study Tour for collection of medicinal plants from various areas of the country.

**Recommended Books:**

1. Hakim Abdul Hannan, Aftab Saeed, Tabiba Uzma Shafi, 2013, **Text Book of Pharmacognosy and Materia Medica** (in Urdu). Faculty of Eastern Medicine, Hamdard University, Illustrations, pp 275+15.
2. V.E. Tyler, L.R. Brady and J.E. Robbers, **Pharmacognosy**, 9th Eds: Lea and Febiger, Philadelphia, 1988.
3. G.E. Trease and W.C. Evans, **Pharmacognosy**, W.B. Saunders, Philadelphia, Toronto, 2002.
4. Micheal Heinrich and Joanne Barnes, **fundamentals of Pharmacognosy and Phytotherapy**, Churchill Livingdton, Philadelphia, Toronoto, 2005

5. Michal Henrich, Fundamentals of **Pharmacognosy and Phytotherapy**, 4th: Lea and Febiger, Philadelphia, 2003.
6. H. Wagner, **Pharmazeutische Biologie**, Gustav Fischer Verlag, Stuttgart, (German Language), 1982.
7. **WHO Monographs on Selected Medicinal Plants**, Vol 1, World Health Organization, and Geneva, 1999.
8. Betty P-Jackson, **Atlas of Microscopy of Medicinal Plants, Culinary Herbs and Spices**, CBS Publishers, New Delhi, 2000.
9. **PDR for Herbal Medicines**, Medical Economics Company, Newq Jersey, Second Edition 2000.
10. Hson-Mou CHANG, Paul Pui Hay BUT, **Pharmacology and Application of Chinese Materia Medica**, Vol I and II, World Scientific Publishing cop (1983).
11. Iqbal Ahmad, Khan Usmanghani, **Analysis of Medicinal Compounds and Plant Drugs**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 165(2003).
12. Iqbal Azhar, Khan Usmanghani, **Essential Oils**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 324(2002).
13. K. Usmanghani, **Herbal Medicine Industry in Pakistan**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 225(2000).
14. Kamal Masood Adhami, Syed Waseemuddin Ahmad, Khan Usmanghani, **Drug Analysis on H.P.L.C.**, Department of Pharmacognosy, University of Karachi, Karachi, Pakistan, pp.271 (1999).
15. 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, pp. 151 (1997).
16. K.Usmanghani, **Researches on Materia Medica**, Department of Pharmacognosy, University of Karachi, pp. 775(1997).
17. K.Usmanghani, Aftab Saeed, Tanweer Alam, **Indusyunic Medicine**, Department of Pharmacognosy, University of Karachi, pp. 601 (1997).
18. K.Usmanghani, Simin Shameel, **Index of Herb Drugs of Pakistan**, Department of Pharmacognosy, University of Karachi, Karachi, pp. 304 (1996).
19. K.Usmanghani, **Biologically Active Alkaloids and Glycosides**, Hamdard Foundation, Pakistan, Karachi, pp. 155 (1989).
20. K.Usmanghani, W.Miki, G.Honda, **Herbal Drugs and Herbalist in Pakistan**, Tokyo University of Foreign Studies, Tokyo, Japan, pp. 281 (1986).
21. K.Usmanghani, **Topics in Pharmacognosy**, University Grants Commission Monograph Series, Islamabad, pp. 74 (1985).

**BIT-246 Bioinformatics (Theory) (المعلومات الحيوية)**  
**Semester-IV, (Credit Hours 3+1)**

1. Introduction and overview of Bioinformatics (مقدمة المعلوماتية الحيوية), Organization and structure of Genomes (هيكل الجينوم), Subdividing the genome (الخريطة الجسدية للجينوم), Physical Map of genome (تطبيق الجينوم), Multiple sequence alignment (متعددة تسلسل المعاداة من الجين) (مرافق الجينات و البروتينات).
2. Neuroinformatics in biology, application of genome analysis and genomics.
3. Introduction to principle of gene therapy and gene delivery system (نظام توصيل الجينات و مقدمة العلاج الجيني).
4. Computer programming for bioinformatics: (برمجة الكمبيوتر في المعلومات الحيوية) Software for bioinformatics (تطوير البرمجيات في المعلومات الحيوية), Micro-array (البرلجة الجزيئية), Medical records (السجلات الطبية), Clinical Database and Database models (قاعدة البيانات), Medical Imaging and Digital imaging, Data acquisition (الحصول على البيانات), Patient machine interface (واجهة الجهاز المريض), Networks (شبكة), Data-exchange (تبادل البيانات), Automated Diagnostic systems (نظام التشخيص الآلي).

**Bioinformatics (Practical)**

1. Basic principle of computing in bioinformatics (مبدأ الحوسبة في البيونيفورمتيك).
2. Web retrieving for genomic and proteomic data (بيانات البروتين)
3. Basic molecular techniques (الجزيئية الأساسية).

**Recommended Books:**

1. Anna Tramontano, **The Ten Most Wanted Solutions in Protein Bioinformatics**, CRC Press, 1st edition, May 2005 .
2. Hooman Rashidi, Lukas K. Buehler, **Bioinformatics Basics: Applications in Biological Science and Medicine**, CRC Press/Taylor & Francis Group, 2nd edition, May 2005
3. Andreas D. Baxevanis (Ed), B. F. Francis Ouellette (Ed), **Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins**, Wiley, John & Sons, Incorporated, 3rd edition, October 2004.
4. Jeffrey Augen, **Bioinformatics in the Post-Genomic Era: Genome, Transcriptome, Proteome, and Information-Based Medicine**, Addison-Wesley, 1st edition, August 2004.
5. C. A. Orengo, D. T. Jones, J. M. Thornton (Ed), D. T. Jones (Ed), **Bioinformatics: Genes, Proteins and Computers**, Routledge, 1st edition, May 2003.
6. Stephen A. Krawetz, David D. Womble, **Introduction to Bioinformatics: A Theoretical and Practical Approach**, Humana Press, 1st, Book & CD-ROM edition, May 2003.
7. Jean Claverie, Cedric Notredame, **Bioinformatics for Dummies**, Wiley, John & Sons, Incorporated, 1st edition, January 2003.
8. Bryan Bergeron, **Bioinformatics Computing**, Prentice Hall PTR, 1st edition, November 2002.
9. Arthur M. Lesk, **Introduction to Bioinformatics**, Oxford University Press, 1st edition, September 2002.

10. Malcolm Campbell, Laurie J. Heyer, **Discovering Genomics, Proteomics, and Bioinformatics**, Benjamin/Cummings, Book and CD-ROM edition, September 2002.
11. Dan E. Krane, Michael L. Raymer, **Fundamental Concepts of Bioinformatics**, Benjamin/Cummings, 1st edition, September 2002.
12. Christoph W. Sensen (Ed), **Essentials of Genomics and Bioinformatics**, Wiley, John & Sons, Incorporated, 1st edition, May 2002
13. Teresa K. Attwood, David Parry-Smith, **Introduction to Bioinformatics**, Pearson Education, 1st edition, May 2001.
14. Laurie J. Heyer, **Discovering Genomics, Proteomics, and Bioinformatics**, Benjamin/Cummings, Book and CD-ROM edition, September 2002.



## 5<sup>th</sup> and 6<sup>th</sup> Semester, BEMS Third Professional

Course Code	Course No.	Fifth Semester	Cr. Hr.
PHP	351	Pharmacy-I	3+1
PAT	352	Pathology-I	3+1
MTM	353	Materia Medica-I	3+1
PHS	354	Pharmacognosy-III	3+1
MED	355	Mualijat (Medicine)-I	3+1
COM	356	Community Medicine	3+1
<b>Total Course 6</b>			18+6

Course Code	Course No.	Sixth Semester	Cr. Hr.
PHP	361	Pharmacy-II	3+1
MIC	362	Microbiology and Parasitology	3+1
MTM	363	Materia Medica-II	3+1
PHS	364	Pharmacognosy-IV	3+1
MED	365	Mualijat (Medicine)-II	3+1
FMT	366	Forensic Medicine and Toxicology	3+1
<b>Total Course 6</b>			18+6

**Total Credit Hours: 48**

### FIFTH SEMESTER

#### **PHP-351 Pharmacy-I (Theory) (علم صيدله)** **Semester-V, (Credit Hours 3+1)**

- 1. Introduction:** Introduction to pharmacy physicians (علم صيدله) and phyto-pharmaceutical (نباتى علم صيدله) manufacturing. The duties of (herbalists) (اطباء) and hygiene (حفظن صحت كے اصول) of manufacturing area. Weights and measures (اوزان و پيماش), states of matter and changes of states such as sublimation (عمل تصعيد), critical points, superficial fluid etc, pH and other general topics in pharmaceutical practice (دوا سازى كى مہارت).
- 2. Introduction to Pharmaceutical Preparation and Dosage Forms:** Solutions (محلولات), Emulsions (ايملشن), suspension and extract (عصاره / رُب), parenteral preparations, ophthalmic preparations (امراض چشم كے مركبات), medicated applications (ointments) (مرايم) and suppositories (حقنه), Powders (sieving and bulk powders), Oral dosage forms (مقدار خوراك), unani medicaments (ايونانى ادويات), aerosols (امراض تنفس كى ادويات).
- 3. Technology used for Processing of Medicinal Plants:** Introduction, Drying of natural drugs, precautions, sieving (چھاننے كا عمل), traditional method of grinding (عمل سحق) etc, Drug grinding, drug extraction (عصاره - رُب), extract concentration (ارتكاز عصاره), purification of extract (تصفية عصاره), Formulation of plant extract (نباتى عصاره), dosage forms, and steam distillation of volatile oil (بھاپى عمل تقطير) and expression of fixed oil (روغن جامد). Preparation and identity of different concentrated qawami drugs (خواص ادويات), methods of Mudabbir (attenuation) (مدبر), tasfiya (تصفية) (clarification) (مصفى),

4. **Study of Analytical techniques:** Specialized analytical methods and equipments, instrumental methods of analysis, X-ray diffraction, spectrometry.

### Pharmacy-I (Practical):

1. Preparations of Different Unani Dosage Forms
2. Haboob (حبوب) (pills) and Aqrass (اقراص) (tablets), methods with devices for their formulation.
3. Modern methods of the preparation for Aussara (عصاره) and Satt (ست). Definition of Rub, methods of obtaining rub from plants and fruits. Methods of conversion of thin fluid "Aussara" into thick, dry "Aussara and Rub" (عصاره)
4. Method of preparation of Khisanda (خيسانده) (infusion) and Joshanda (جوشانده) (Decoction)
5. Method of preparation of "Luabb and Sheera" (لبوب وشيره)
6. Methods of obtaining Fats (Roaghnyat) (روغنيات)
7. Method of formation of Qayrooti (قيروطي) and Ointment (مرهم).
8. Roasting (عمل تحميص) and correction method
9. Muddabir (مدبر) (Attenuation), Tasfia (تصفية) (Clarification), Tasveel (تحصيل) (Filtration) and Ghusal (غسل) (Bath)
10. Aarq (عرقيات) (Distillation) (عمل تقطير)

### Recommended Books:

1. Hakim Muhammad Kabiruddin, **Biyaz-e- Kabir** Vol III (Pharmacy), Sheikh Muhammad Bashir and Sons, Lahore, (1998).
2. Hakim Khawaja 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, 19<sup>th</sup> Edition, (1995).
5. R.O.B. Wijesekera, **The Medicinal Plant Industry**, CRC Press, Boca Raton, (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).

### PAT-352 Pathology-I (Theory) (علم الامراض)

#### Semester-V, (Credit Hours 3+1)

1. Introduction, Need, Importance and Division of Pathology
2. Terminology
3. **General Pathology: Cell Injury** (ضربة خلية); Definition, Causes of cell Injury, Mech. of cell injury, Morphology of cell Injury, Intracellular accumulation, Cellular Adaptation of growth and differentiation, Atrophy (ضمور),

Hypertrophy(تضخم), Hyperplasia(فرط تنسج), Metaphase (حوول), Dysplasia (خلل خلل (حاد اور مزمن التهاب) **Acute and Chronic Inflammation** (التنسج), Acute Inflammation(حادالتهاب), Vascular changes(تغيرات العروق), Vascular Permeability(نفاذية الاوعية الدموية), Changes in vascular flow and Caliber (التغيرات في الوسطاء (Cellular Events(الاحداث الخلوية), Chemical Mediators (تدفق الاوعية الدموية و العيار), Chronic Inflammation, Definition and cause, **Repair**; Cell Growth(نموالخلايا), Regeneration(التجديد), Wound healing(التئام الجروح), Pathological aspect of repair(الجوانب المرضية لاصلاح), **Disorder of Fluid**; Vascular Flow and Shock((تدفق الاوعية الدموية الصدمة), Edema(وذمة), Hyperemia and Congestion(تليغ والاذحام), Haemorrhage (النزف) Thrombosis(تجلط الدم), Embolism(الانسداد), Infarction(احتشاء), Shock(صدمة). **Genetics and Diseases علم** Marfan's Syndrome(متلازمة مارفان), Familial hypercholesterolemia(التهاب المفاصل رهيماثويد), RA(المجموعية), Cystic fibrosis (التليف الكيسي), Gout(النقرس), Down syndrome(متلازمة داون), Trisomy's syndrome (متلازمة تريسمي), Kleni filter Syndrome(متلازمة تصفية كلنلي), Turner syndrome(متلازمة تيرنر), **Disorder of Immune System**(اضطراب في الجهاز المناعي); SLE(الذئبة الحمامية); **Neoplasia**(نيوبلسا), AIDS(الايدز), (التهاب المفاصل رهيماثويد), RA(المجموعية), Definition(تعريف), Nomenclature(التسميات), Characteristic of benign and malignant neoplasm(مميذة الاورام الخبيثة وحميدة), Differentiation and anaplasia(غزوالمحلية), Rate of growth(معدل نمو), Local Inversion(انتشار الورم), Metastasis (ورم خبيث), Spread of Tumor(انتشار الورم), Etiology of cancer --- Carcinogenic Agent(مادة الكيمية مسرطن), Chemical Carcinogen(مسرطن), Radiation Carcinogen(مسرطنة), Viral Carcinogen(مسرطن الفيروسي), Clinical features of neoplasm(مظاهر اسريرية اللورام), Effects of tumor on host(تأثيرات الورم في المضيف), Grading and Staging of Cancer(الدرجات و تحديد مراحل), Laboratory diagnosis of Cancer(مختبر تشخيص السرطان), **Environmental and Occupational disorders**(الاضطرابات البيئية و المهنية); Smoking(التدخين), Pneumoconiosis(فحمى), Coal mine worker's disease(المرض عامل منجم الفحم), Silicosis(اسحار), Asbestosis(تليف الرنتين الاسبستي), Aspirin Abuse(تعاطى الاسبرين), Exogenous estrogen and oral Contraceptives(الاستروجين خارجية وسائل منع الحمل عن), Carbon Monoxide(اول), Lead(يودي), Acetaminophen(اسيتامينوفين), Alcohol and Ethanol(الكحول و ايثانول), Heroin + Hashish(البطله), Electrical Injury(ارتفاع الحرارة), Hyperthermia(الجروح الحرارية), Thermal Burns(الحشيش), (الاصابات الكهربائية), Injury by Ionizing agents or Radiation(الاصابات بالعوامل المؤنية او الاشعاع), **Nutritional Disorders**(الاضطرابات التغذوية) Kwashiorkor(كواشيوركور), Marasmus(الضوى), Anorexia(فقدان الشهية), Vitamin Deficiencies Thiamine, Riboflavin, Niacin, Pyridoxine and Vitamin C, A, D, E, K(نقص فيتامين د، ه، ك، الثيامين، والريبوفلافين، B6, Zinc deficiency(نقص الزنك), Iron deficiency(نقص الحديد), Copper deficiency(نقص النحاس), Selenium deficiency(نقص السيلينيوم), Diet and Cancer(النظام الغذاء و السرطان), Obesity(السمنة), (السيلينيوم)

4. Injury by Ionizing agents or Radiation(الاصابات بالعوامل المؤنية او الاشعاع), **Nutritional Disorders**(الاضطرابات التغذوية) Kwashiorkor(كواشيوركور), Marasmus(الضوى), Anorexia(فقدان الشهية), Vitamin Deficiencies Thiamine, Riboflavin, Niacin, Pyridoxine and Vitamin C, A, D, E, K(نقص فيتامين د، ه، ك، الثيامين، والريبوفلافين، B6, Zinc deficiency(نقص الزنك), Iron deficiency(نقص الحديد), Copper deficiency(نقص النحاس), Selenium deficiency(نقص السيلينيوم), Diet and Cancer(النظام الغذاء و السرطان), Obesity(السمنة), (السيلينيوم)

### Pathology and Histopathology (Practical):

1. Urine complete examination(فحص البول الكامل)
2. Stool complete examination(فحص البراز الكامل)
3. Blood complete examination (فحص دم الكامل)

4. Blood sugar, blood urea, blood cholesterol في الدم، الكوليسترول في الدم، اليوريا في الدم، السكرى، (دم سكري، اليوريا في الدم، الكوليسترول في الدم)

### Recommended Books:

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

### MTM-353 Materia Medica-I (Theory) (علم الادوية) المواد الطبية Semester-V, (Credit Hours 3+1)

1. **Historical status and evolution of Eastern medicine** (الوضع التاريخي و تطور الطب)
2. **Terminologies** (المصطلحات)
3. **Types of plants according to size and shape and according to their properties** (انواع النباتات حسب حجم و شكل) Herbs, Shrubs, Trees, Non toxic, Semi toxic, Toxic. (غير سامة ، شبه سامة، سامة) (انواع حسب خصائص)
4. **Explanation of Medicine** (شرح الادوية): Name of drug (اسم الادوية), Famous name, Occurrence, Botanical name (اسم النباتي), Structure, Chemical composition, Temperament, Properties, Crude drugs, Medicinal uses, Toxic effects, after effects, Tenedium (بدل), Corrigent (مصلح), Effective period, Dose, Routes of Administration (طرق اعطاء الادوية).
5. **Systemic Action of Medicine** (تأثير الادوية على الجسم): Study of selected herbal drugs or bioactive natural products affecting the different system of the body for curative and preventive actions.
6. **Autonomic Nervous System** (الجهاز العصبي المستقل): *Ephedra sinica* (سوم كليفا), *Areca catechu* (سپاری- جهالو), *Rauwolfia serpentina* (السرول), *Hyoscyamus niger* (اجونن خراساني), *Pilocarpus jaborandi*, etc.
7. **Respiratory System** (اجهاز التنفس): *Glycyrrhiza glabra* (مليثهي), *Hyssopus officinalis* (زوف)، *Ephedra gerardiana*, *Malva sylvestris* (خبزای)، *Cordia latifolia* (سپستان)، etc.

### Materia Medica-I (Practical)

1. To study the clinical trials in which pre-clinical as well as clinical tests are discussed.
2. To study and demonstrate different drug delivery systems e.g (طريق الفم). Oral, Parenteral (عبر الجسم)، Rectal (طريق بالمعنى المستقيم)، Topical (محلّي)، Inhalation etc. (استنشاق)

### Recommended Books:

1. Hson-Mou CHANG, Paul Pui Hay BUT, Pharmacology and Application of Chinese Materia Medica, Vol I and II, World Scientific Publishing Corporation (1983).
2. V. E. Tyler, Lyn R. Brody, James E. Robess, Pharmacognosy and Biotechnology Lea and Febiger, Philadelphia (1991).

3. Indian Materia Medica Nadkarni
4. Wealth of India

### PHS-354 Pharmacognosy-III (Theory)

Semester–V (عفاقير طبيية) (Credit Hours 3+1)

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,
2. **Carbohydrates** (كاربوہائی ڈیڑٹز): 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 (گوند) and Mucilages (لعابدار), Tragacanth (گوند پیکٹن), Acacia (گوند بیول), Sodium Alginate (سوڈیم الجدنیٹ), Agar (ایگار), Pectin (پیکٹن فانیبر).
3. **Glycosides** (گلانیکوسائیڈ): Introduction, classification, chemistry and medicinal uses of, **Cardioactive glycosides**; Digitalis, Strophanthus and white squill, **Anthroquinone glycosides**; Cascara, Aloe (ایلوا), Rhubarb (ریوند چینی), Cochineal and Senna (سنا مکی), **Saponin glycosides**; Glycyrrhiza (ملیٹھی), Sarsaparilla (عشبه مغربی), **Cyanophore glycosides**; Wild cherry (چیری), **Isothiocyanate glycosides**; Black Mustard (کالی سرسوں), **Lactone glycosides**; Cantharide, **Aldehyde glycosides**; Vanilla, **Miscellaneous glycosides**; Gentian (جنطیانہ), Quassia (قواسی), Dioscorea.
4. **Tannins:** Introduction, classification, properties and chemical identity tests, Detailed study of Hamamelis, Catechu, Nut Galls

## Single (Mufrid ) Unani Medicine

1. *Cinnamomum cassia*(دارچینی)
2. *Berberis aristata*(دار بلد)
3. *Doronicum hookeri*(درونج عقربی)
4. *Daemonorops*(دم الاخوین)
5. *Ephedra gerardiana*(سوم کلپا)
6. *Datura stramonium*(دهتورہ)
7. *Butea monosperma*(ڈھاگ)
8. *Ocimum basilicum*(تلسی)
9. *Rheum emodi*(ریوندچینی)
10. *Crocus sativus*(زعفران)
11. *Berberis aristata/berry*،(زرشک)
12. *Zingiber officinale*،(زنجبیل)
13. *Hyssopus officinalis*(زوفا)
14. *Zahar mohra*،(زبرمہرہ)
15. *Cuminum cyminum*(زیرہ سفید)
16. *Piper betle*(سپاری)
17. *Cordia latifolia*(سپستان)
18. *Asparagus racemosus*(ستاور)
19. *Sturgeon's bladder*(سریشم مابی)
20. *Cuttlefish bone*(سمندر جھاگ)
21. *Asphaltum*(سلاجیت)
22. *Rhus succedanea*(سماق)
23. *Arsenic sulphate*(سم الفار)
24. *Cassia senna*(سنا مکی)
25. *Canscora decussata*(سنکھاہولی)
26. *Magnesium trisilicate*(سنگ جراحت)
27. *Valeriana officinalis*(بالچھڑ)
28. *Colchicum autumnale*(سورنجان شیریں)
29. *Colchicum luteum*(سورنجان تلخ)
30. *Anethum graveolens*(سویا)
31. *Borax*(سہاگہ)
32. *Apple*(سیب)
33. *Potassium nitrate*(شورہ قلعی)
34. *Ostrea gigas*(سیپ / صدف)
35. *Santalum album* (صندل سفید)
36. *Bambusa arundinacea*(طباشیر)
37. *Anacyclus pyrethrum*(عقرقرحا)
38. *Smilax ornate* (عشبہ مغربی)
39. *Ziziphus jujuba* (عناب)
40. *Ambergris* (عنبر)
41. *Ocimum sanctum*(فر نجمشک)
42. *Piper nigrum* (فلفل سیاہ)
43. *Citrus sinensis*(موسمی)
44. *Malta*(سنترہ)
45. *Cichorium intybus*(کاسنی)
46. *Camphor*(کیمفر)
47. *Piper cubeba*(کباب چینی)
48. *Bauhinia variegata*(کچنار)
49. *Caesalpinia bonducella*(کرنجوه)
50. *Cassia occidentalis*(کسوندی)
51. *Coriandrum sativum* (دھنیا)
52. *Nigella sativa*(کلونجی)
53. *Mallotus philippensis*(کمیلہ)
54. *Acacia Arabica*(ببول)
55. *Sizygium aromaticum*(قرنفل)
56. *Borago officinalis/Leaves*(برگ گاؤزبان)
57. *Borago officinalis/Flowers*،(گل گاؤزبان)
58. *Rosa damascena* (گل سرخ)
59. *Chrysanthemum coronarium* (گل داؤدی)
60. *Tinospora cordifolia*(گلو)
61. *Sulphur sublimatum*(گندھک)
62. *Aloe barbedensis*(ایلویرا)
63. *Atropa belladonna*(لفاح)
64. *Benzoin dryander*(لوبان)
65. *Allium sativum*(لہسن)
66. *Daphne mezereum*(مازیرون)
67. *Rubia cordifolia*(مجیٹھ)
68. *Milk thistle* (اونٹ کٹارا)
69. *Pistacia lentiscus*(مصطگی)
70. *Citrullus vulgaris (Watermelon)*(تریوز)
71. *Solanum nigrum*(مکو)
72. *Sweet melon*(خرپوزہ)
73. *Sphaeranthus indicus*(گل منڈی)
74. *Lodoicea maldivica*(نارجیل دریائ)
75. *Curcuma zedoaria*(زرنباد)
76. *Sodium benzoate*(نظرون بنجاوی)
77. *Nailkunth*(کنٹھ)
78. *Nymphaea nelumbo*(گل نیلوفر)
79. *Azadirachta indica*(نیم)
80. *Terminalia chebula*(بلیلہ)

### **Pharmacognosy-III (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. Hakim Abdul Hannan, Aftab Saeed, Tabiba Uzma Shafi, 2013, **Text Book of Pharmacognosy and Materia Medica** (in Urdu). Faculty of Eastern Medicine, Hamdard University, Illustrations, pp 275+15.
2. V.E. Tyler, L.R. Brady and J.E. Robbers, **Pharmacognosy**, 9<sup>th</sup> Eds: Lea and Febiger, Philadelphia, (1988).
3. G.E. Trease and W.C. Evans, **Pharmacognosy**, W.B. Saunders, Philadelphia, Toronto, (2002).
4. H. Wagner, Gustav Fischer Verlag, **Pharmazeutische Biologie**, Stuttgart, (German Language), (1982).
5. Micheal Heinrich and Joanne Barnes, **fundamentals of Pharmacognosy and Phytotherapy**, Churchill Livingstone, Philadelphia, Toronto, 2005
6. **WHO Monographs on Selected Medicinal Plants**, Vol-I, World Health Organization, and Geneva, (1999).
7. Betty P-Jackson, **Atlas of Microscopy of Medicinal Plants, Culinary Herbs and Spices**, CBS Publishers, New Delhi, (2000).
8. **PDR for Herbal Medicines**, Medical Economics Company, New Jersey, Second Edition (2000).
9. Hson-Mou CHANG, Paul Pui Hay BUT, **Pharmacology and Application of Chinese Materia Medica**, Vol I and II, World Scientific Publishing cop (1983).
10. Iqbal Ahmad, Khan Usmanghani, **Analysis of Medicinal Compounds and Plant Drugs**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 165(2003).
11. Iqbal Azhar, Khan Usmanghani, **Essential Oils**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 324 (2002).
12. K. Usmanghani, **Herbal Medicine Industry in Pakistan**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 225(2000).
13. Kamal Masood Adhami, Syed Waseemuddin Ahmad, Khan Usmanghani, **Drug Analysis on H.P.L.C.**, Department of Pharmacognosy, University of Karachi, Karachi, Pakistan, pp.271 (1999).
14. 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, pp. 151 (1997).
15. K.Usmanghani, **Researches on Materia Medica**, Department of Pharmacognosy, University of Karachi, pp. 775(1997).
16. K.Usmanghani, Aftab Saeed, Tanweer Alam, **Indusyunic Medicine**, Department of Pharmacognosy, University of Karachi, pp. 601 (1997).

17. K.Usmanghani, Simin Shameel, **Index of Herb Drugs of Pakistan**, Department of Pharmacognosy, University of Karachi, Karachi, pp. 304 (1996).
18. K.Usmanghani, **Biologically Active Alkaloids and Glycosides**, Hamdard Foundation, Pakistan, Karachi, pp. 155 (1989).
19. K.Usmanghani, W.Miki, G.Honda, **Herbal Drugs and Herbalist in Pakistan**, Tokyo University of Foreign Studies, Tokyo, Japan, pp. 281 (1986).
20. K.Usmanghani, **Topics in Pharmacognosy**, University Grants Commission Monograph Series, Islamabad, pp. 74 (1985).

## **MED-355 Mualijat (Medicine)-I (معالجات) (Theory)** **Semester-V, (Credit Hours 3+1)**

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 laboratory support) principles of medicine (management and dietary management) prognosis complications and preventions. Temperament of all diseases and relevant medicines with their temprament. Diagnosis of the disease should be taught with sua mizaj Madi also.

### **1) Presenting Complaints of Gastrointestinal Tract (الشكاوى من الجهاز الهضمي)**

(المسالك)

- I. Dysphagia (عسر البلع)
- II. Dyspepsia (سوء الهضم)
- III. Vomiting (قے)
- IV. Gastrointestinal bleeding (النزيف المعدي المعوي)
- V. Diarrhea (الإسهال)
- VI. Malabsorption (سوء الامتصاص)
- VII. Weight loss (تخسس الوزن)
- VIII. Constipation (قبض)
- IX. Abdominal Pain (ألم في البطن)
- 2) **Disease of mouth and salivary gland (أمراض الفم والغدد اللعابية)**
- 3) **Disease of Esophagus (امراض المريء)**
- I. Gastro-esophageal reflux disease (ارتداد المرض المعدي)
- 4) Motility disorder (اضطراب حركية)
- 5) Tumours of esophagus (أورام المريء)
- 6) **Disorder of Stomach and Duodenum (مرض المعدة والاثني عشر)**
- 7) **Disease of small intestine (مرض من الأمعاء صغير)**
- 8) Motility disorder of small intestine (اضطراب الحركة من الأمعاء صغير)
- 9) Miscellaneous disorder of small intestine (اضطراب متنوعة من الأمعاء صغير)
- 10) Adverse food reaction (رد فعل الغذائية الضارة)
- 11) Infection of small intestine (العدوى من الأمعاء صغير)
- 12) Tumours of small intestine (أورام / سلع الأمعاء صغير)
- 13) **Disease of Pancreas (امراض بانقراس)**



- 14) **Inflammatory bowel disease** (مرض التهاب الأمعاء)
- 15) **Irritable bowel syndrome** (متلازمة القولون المتهيج)
- 16) **Anorectal disease** (مرض الشرجية)

### **Mualijat (Medicine)-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 4<sup>th</sup>, 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. C.R.W. Edward, and I.A.D. Boucher:Eds, **Davidsons Practice of Medicine**, BPC Publisher, London (1990).

### **COM-356 Community Medicine (طب المجتمع) سماجی طب (Theory) Semester–V, (Credit Hours 3+1)**

1. Introduction and Basic Concepts: Definition, community medicine سماجی طب , preventive medicine, social medicine, social hygiene, public health, scope and applications of community medicine, personal hygiene ذاتی حفظان صحت , health صحت , disease and illness, spectrum of health, determinants of health اسباب صحت , indicators of health, concept of causation (all theories including ecological triad), agent, host میزبان and environmental factors ماحولیاتی عوامل , iceberg phenomenon, natural history of origin of illness, level of prevention of disease بیماریوں کی روک تھام کے درجے .

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: آلودگی , contamination, pollution , infestation, incubation period , مدت حضانت , infective period , مدت تعدیه , host , immune and susceptible persons, sporadic , امراض فردیه , endemic , امراض متوطن , epidemic , امراض وبائیہ , pandemic , امراض عدیدالبلدان , epizootic , وباء حیوانی , exotic , zoonosis , امراض حیوانی مصدر , contact, fomites, carriers and their types, reservoirs of infection, spread , تعدیه کا پھیلاؤ , channels, routes of transmission, cross infection, nosocomial infection, opportunistic infections, control of infection, isolation , استفراد , quarantine , قرنطینہ , sterilization , عمل تطہیر , disinfection , دافع تعفن
4. Immunity and Vaccination: Immunity , قوت مناعت , types of immunity, immunization, vaccination , عمل تلقیح , vaccines and their types, new coming vaccines, indication and contraindications of vaccines, hazards of vaccinations
5. **Occupational Health** : پیشہ ورانہ صحت : History of Occupation and Health, Relationship between Occupation and Health, Common Occupational Diseases , پیشہ ورانہ امراض سے Occupational Disease Prevention , پیشہ ورانہ امراض بچاؤ
6. **Epidemiology** : علم الوبائیات : History and concepts of Epidemiology, Uses, Basic measurements in epidemiology (Morbidity , شرح امراض , Mortality , شرح اموات , Disability , مفلوجی and Fatality), Distribution, Determinants, Incidence and Prevalence Rate , شرح انتشار , Epidemiological methods (Descriptive , علم الوبائیات الوصفی , analytical , علم الوبائیات التحلیلی and experimental , علم الوبائیات التجربییہ), Epidimiological transition , نظریہ التحول الوبائی , Association and causation, Screening for disease, Community diagnosis, Research and Survey Methodology,
7. **Demography and Population dynamics** : علم السُکَّان و حرکیۃ : Concept, demographic principles and demographic processes, census , مردم شماری , methodology, types, determinants of fertility, mortality , شرح اموات , population pyramid, and its interpretation, demographic transition, demographic trap and its public health importance, demographic and social implication of high population growth, social mobilization, urbanization
8. **Food and Nutrition** : غذاء اور غذائیت : Nutrition, nutrient, food, diet, food groups and their functions, role of fiber in diet, balanced diet , متوازن غذاء , malnutrition , غذائی قلت and its types, causes and prevention, common nutritional problems of public health importance and their prevention and control, dietary requirements of normal human being at different stages of life, food hygiene , کھانے کی صفائی , pasteurization, fortification, additives and adulteration and preservation of food , غذاء کا تحفظ , food poisoning, assessment of nutritional status of a community
9. Family Health : خاندانی صحت : Social obstetrics, safe motherhood , محفوظ زچگی and its components (ante-natal, post-natal and emergency obstetric care), maternal mortality , شرح اموات , infant mortality , شرح موت کی , بچوں کی موت کی , breast feeding and problem associated with artificial feeding, family

planning , خاندانی منصوبہ بندی , conventional contraception, surgical methods and subcutaneous method.

### **Community Medicine سماجی طب (Viva)**

1. Student should have practical experience in questionnaire development, data collection, compilation, presentation, analysis and report writing
2. History taking of patients suffering from five infectious diseases and five occupational diseases
3. Chart making of microbial diseases
4. Chart making of methods of contraception
5. Chart making of a balance diet, nutrients and food pyramid model
6. Model making of infectious diseases

### **Visits**

1. Visit of hospital to observe the different strategies for management of infectious diseases
2. Visit of any industry to observe industrial and occupational health hazards
3. Visit of psychiatric ward to observe mental diseases management and their rehabilitation
4. Visit to a hospital to observe hospital waste disposal
5. Visit to RHC (Rural Health Care Center) to observe nutritional counseling for children, pregnant and lactating women

### **Recommended Books:**

1. Mohammad Ilyas, **Community Medicine and Public Health**, Time Traders, Karachi.
2. **Foundations of Community Medicine**, G M Dhaar, I Robbani, Elsevier, latest edition
3. Karen A Savcier, **Perspective in Family and Community Medicine**, Mosby Year Book, London (1991).
4. Charles H Hennekens, **Epidemiology in Medicine**, Little Brown and Company (1987).
5. **Textbook of Community Medicine (Preventive & Social Medicine)**, Sunderlal, 2007
6. **Oxford Handbook of Public Health Practice (Oxford Handbooks Series)**, David Pencheon, David Melzer, Muir Gray and Charles Guest, 2006
7. **Text book of Community Medicine**, Park J E, latest edition
8. **Research Methods in Community Medicine: Surveys, Epidemiological Research, Programme Evaluation, Clinical Trials**, Joseph Abramson and Z. H. Abramson, 2008
9. **Medical Statistics**, R. Turkwood, 2<sup>nd</sup> edition
10. Hakim Ikral Ali Qureshi, **Qanoon-e-Sehat**, Text Books Board, Karachi (1996).
11. Muhammad Usman Khan, **Mubadi-I-Sehat**, Hamdard Academy, Karachi.

## SIXTH SEMESTER

### PHP-361 Pharmacy-II (Theory) Semester–VI, (Credit Hours 3+1)

- Quality Control (معیاری قراری) and Quality Assurance (یقینی معیار) of Plant Extract (عصاره نباتات):** Quality control and quality assurance and standardization of natural medicine of herbal (نباتات), animal (حیوانات) and mineral (معدنیات) origin.
- Introduction to plant Biotechnology (حیاتی ٹیکنالوجی):**
- Elementology (علم عناصریات):** Toxic and Non Toxic Nature Introduction to elementology and study on KUSHTA (کشتہ).
- Physicochemical Processes (طبعی و کیمیائی عملیات):** Precipitation (رسوب): Process of precipitation and its applications in Pharmacy (علم صیدلہ), Crystallization (قلمائو): Types of crystals, Mechanism and methods of crystallization and its applications in Pharmacy, Distillation (عمل تقطیر), Simple, fractional, steam distillation, vacuum distillation (عمل تقطیر), destructive distillation and their applications in Pharmacy, Miscellaneous Processes (عملیات دیگر): Efflorescence (تذیر), deliquescence (رقیق), lyophilization (حیاتی مواد کو خلا میں منجمد کر کے خشک کرنے کا عمل), elutriation (نتھارو), vaporization (بخار بنانا), ignition (جلانا), sublimation (تصعید), fusion (خیساندہ), calcinations (عمل نتھار), adsorption (جذب), decantation (عمل نتھار), evaporation (عمل تبخیر), vaporization (بخار بنانا), centrifugation (مرکز گزیری), desiccation (مُجفف), levigation (عمل سحق تر) and trituration (عمل سحق).
- Degradation (مادوں کا تحلیل ہونا):** Physical Factors (طبعی عوامل): Influence of pH, temperature (درجہء حرارت), ionic strength, acid-base (تیزاب. اساس توازن) catalysis, U.V. light, Chemical Factors (کیمیائی عوامل): Complex chemical reactions (پیچیدہ تحلیل آب کے لئے عمل تکسید و عمل تحفیف). Oxidation-reduction (کیمیائی ردے عمل) hydrolysis

### Pharmacy-II (Practical)

Preparations of Different Unani Dosage Forms

- Method of preparation of Khamira (خمیرہ) (infusion) and Laooq (لعوق) and Xisandeh (خیساندہ)
- Method of preparation of “Trinut Electuary (اطریفلات)”
- Methods of Preparation of powder (سفوفات)
- Method of formation of Stomach Electuary (جوارشات).
- Method of Preparation of Sugar Syrup (شربت)
- Preparation of Kushtajat

### Recommended Books:

- Hakim Muhammad Kabiruddin, **Biyaz-e- Kabir** Vol III (Pharmacy), Sheikh Muhammad Bashir and Sons, Lahore, (1998).
- Hakim Khawaja Rizwan Ahmed, **Dehli Ke Sahee Murakkabat**, Sheikh Muhammad Bashir and Sons, Lahore, (1998).
- Pharmaceutical Advisory Council. **Qarabadeen-e-Hamdard**, Hamdard Foundation Pakistan, Karachi, (1982).

4. Remington, **The Science and Practice of Pharmacy**,(Ed:Alfanzo R.Gennaro,Mack Printing Co.,Easton,Pennsylvania, 19<sup>th</sup> Edition,(1995).
5. R.O.B.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 Indusyunic Medicine, Karachi, (2000).
8. **Pharmaceutical Practice**, (Eds. D.M.Collet. M.E.Aulton) Longman Singapore Publisher, Singapore, (1991).

## **MIC-362 Microbiology and Parasitology (Theory)**

(علم الأحياء الدقيقة والطفيليات)

**Semester–VI, (Credit Hours 3+1)**

1. **Historical Status and Evolution of Microbiology and Parasitology**  
(الحالة التاريخية وتطور علم الأحياء الدقيقة والطفيليات)
2. **Scope of Microbiology with Special Reference to the Scientific Concepts of Eastern System of Medicine**  
(نطاق الأحياء الدقيقة مع إشارة خاصة إلى المفاهيم العلمية لنظام شرق الطب)
3. **Terminology (Descriptive) مصطلحات**
4. **Nomenclature and Classification of Micro-Organisms**  
(التسميات و تصنيف الكائنات الحية الدقيقة)

**Organisms: *The Virology***(علم الفيروسات); 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*** (علم الجراثيم العام); 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*** (علم الجراثيم الخاصة); 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 microorganisms.

1. **The Fungi**(الفطريات): Properties of Fungi, Classification of Fungi and their name pathogenic potentials and superficial Mycosis, Systematic fungi,

Actinomyces, Candidiasis, Aspergillosis, Diagnostic Techniques in Mycology

2. **Parasitology**(علم الطفيليات): The Normal Flora, Microbiology 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 histolytica, Giardia lamblia, Trichomonas vaginalis, Leishmania kalazar, Malaria, **Helminthology** (علم الديدان الطفيلية); Cestodes, Tania saginata, Diphylobothrium latum, Echinococcus granulosus, Nematodes, Trichuris trichiura, Ascaris lumbricoides, Enterobius vermicularis, Encylostoma duodenale, Wuchereria bancroftis (Filarisis).
3. **Immunology** (علم جهاز المناعة) 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 ( $\beta$  cell and T Cell development), Major Histocompatibility Complex and transplantation.
4. **Sterilization and Disinfections**(التعقيم و التطهير): Sterilization and Disinfections
5. **Fermentation**(تخمير): Introduction to fermentation and important products produced by the fermentation.
6. **Biotechnology**(التكنولوجيا الحيوية): Background of recombinant technology and applications in this field.

### **Microbiology and Parasitology (Practical):**

1. Study of Microscope and use of oil Immersion Lenses (دراسة المجهر و استخدام العدسات الغمر النفط)
2. Sterilization of Glass ware and products by various methods. (تعقيم الأدوات الزجاجية والمنتجات بطرق مختلفة)
3. **Staining** (تلطيخ): 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 bacteria** (اختبارات بكتيريا مختلفة): 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 (اختبارات الطفيليات والديدان)

#### **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**, 6<sup>th</sup> 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**, 5<sup>th</sup> edition, Churchill Livingstone, London (1998).

### MTM-363 Materia Medica-II (Theory)

#### Semester-VI, (Credit Hours 3+1)

1. **Drugs Acting on Cardiovascular System** (الدواء الذى يعمل على نظام القلب و الاوعية و عدم انتظام ضربات الدم): Anti Hypertensive (مضاد فشار الدم), Cardiac Arrhythmia (اضطراب نظم القلب), *Rauwolfia serpentina* (السرو), *Bombyx morii* (ابریشم), *Acorus calamus*, *Apium graveolans* (بقدونس), *Citrus medica* (الليمون).
2. **Drugs Acting On Hepatic System:** (الدواء الذى يعمل على الكبد) *Mentha piperata* (پودينه), *Swertia chiraita* (چرايته), *Curcuma longa* (بلدى), *Rheum palmatum* (ريوندچينى), *Berberis vulgaris* (رسوت), *Silybum marianum* (اونٹ كٹارا), *Glycyrrhiza glabra* (مليثه).
3. **Drugs Acting on Kidneys** (الدواء الذى يعمل على الكلى): *Plantago ovate* (اسپغول), *Allium cepa* (پياز).
4. **Drugs Acting on Blood** (الدواء الذى يعمل على الدم) Iron containing plants (البنات الذى تحتوى على الحديد)

### Materia Medica II (Practical)

1. To record the pulse rate of a group of students before and after exercise by using statistical methods.
2. To study and demonstrate the effect of drugs on blood pressure (ضغط الدم) of human being by using statistical methods.

### Recommended Books:

1. Hson-Mou CHANG, Paul Pui Hay BUT, Pharmacology and Application of Chinese Materia Medica, Vol I and II, World Scientific Publishing Corporation (1983).
2. V. E. Tyler, Lyn R. Brody, James E. Robess, Pharmacognosy and Biotechnology Lea and Febiger, Philadelphia (1991).
3. Indian Materia Medica Nadkarni
4. Wealth of India

### PHS-364 Pharmacognosy-IV (Theory) (عقاقير طبيه)

#### Semester-VI, (Credit Hours 3+1)

1. **Volatile Oils (Essential Oils)** (روغن فرارى): Introduction, significance, methods of obtaining volatile oils, chemistry and classification, Hydrocarbon volatile oils, Cubb, Terpentine oil, Alcoholic volatile oils, Peppermint (پودينه), *Coriandrum sativum* (دهنیا) and *Elettaria cardamomum* (الانجى خورد), Aldehydic

- volatile oils, Bitter orange peel, Sweet orange peel (موسمی), Lemon (لیموں), cinnamon (دارچینی) and Bitter almond oil (روغن لوز), Ketonic volatile oils, Camphor, Spearmint, caraway (زیره), Buchu, Phenolic volatile oils, Clove (لونگ), Thyme, Phenolic ether volatile oils: *Foeniculum vulgare* (سونف) (Fennel), *Pimpinella anisum* (انیسون) (Anise), *Myristica fragrans* (جانفل / جاوتری), Oxide volatile oils, Eucalyptus (سفیدہ), **Chenopodium**, Ester volatile oils: Rosemary (روغن سرخ), Miscellaneous volatile oils, *Allium sativum* (لہسن), *Anethum graveolans* (سویا).
2. **Resins (رال دار) and Resin Gum (گوند) Combination:** Introduction, properties, difference between glycoresins, oleoresins, oleo-gum resins and balsams (بلسان), Resins: Rosin, Cannabis (قنب), Glycoresins: Podophyllum, Jalap (جلاپا), Ipomoea, Colocynth (حنظل), Oleoresins Turpentine, Capsicum (شملمہ), Ginger (زنجبیل), Oleo-gum resins: *Ferula asafoetida* (بینگ), *Myrtus communis* (حب الاس) (Myrrh), Balsams (بلسان): Storax (لوبان), Peruvian Balsam, Tolu Balsam (بلسان), Benzoin.
  3. **Alkaloids:** Introduction, Properties, classification, Function of alkaloids in plants, methods of extraction of identification tests, Pyridine, Piperidine Alkaloids, Areca nut (سپاری), Lobelia Tobacco (لوبیلیہ تمباکو), Tropane Alkaloids, Belladonna (لفاح), Hyoscyamus (اجوانن خراسانی), Datura stramonium (دھتورہ), Quinoline Alkaloids, Cinchona (سنکونا), Isoquinoline Alkaloids, Ipecacuanha, Opium (افیون), Indole alkaloids, Rauwolfia (اسرول), Catharanthus (سدا بہار), Nux vomica (کچلہ), Physostigma, Ergot (رائی کی پھپھوندی), Imidazole alkaloids, Pilocarpus, Steroidal alkaloids, Veratrum, Alkaloidal amines, Ephedra (سوم کلپا).
  4. **Lipids:** Introduction, Detailed study of Fixed Oils, Castor oil (روغن ارنڈ), cotton seed oil (روغن بنولہ), olive oil (روغن زیتون), peanut oil (روغن مونگ پھلی), sun flower oil (روغن سورج مکھی), corn oil (روغن مکئی), coconut oil (روغن ناریل), Almond oil (روغن بادام), Linseed oil (روغن السی), Mustard oil (روغن سرسوں), Sesame oil (روغن کنجد) and soybean oil (روغن سویا), Fats and Related Compounds: Theobroma oil and Lenolin, Waxes, Bees wax (موم شہد), Carnauba wax, Spermaceti, Jujuba oil (روغن عناب).

### Pharmacognosy-IV (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. Hakim Abdul Hannan, Aftab Saeed, Tabiba Uzma Shafi, 2013, **Text Book of Pharmacognosy and Materia Medica** (in Urdu). Faculty of Eastern Medicine, Hamdard University, Illustrations, pp 275+15.
2. V.E. Tyler, L.R. Brady and J.E. Robbers, **Pharmacognosy**, 9<sup>th</sup> Eds: Lea and Febiger, Philadelphia, (1988).
3. G.E. Trease and W.C. Evans, **Pharmacognosy**, W.B. Saunders, Philadelphia, Toronto, (2002).
4. H. Wagner, Gustav Fischer Verlag, **Pharmazeutische Biologie**, Stuttgart, (German Language), (1982).



5. Micheal Heinrich and Joanne Barnes, **fundamentals of Pharmacognosy and Phytotherapy**, Churchill Livingdttone, Philedelphia, Toronoto, 2005
6. **WHO Monographs on Selected Medicinal Plants**, Vol-I, World Health Organization, and Geneva, (1999).
7. Betty P-Jackson, **Atlas of Microscopy of Medicinal Plants, Culinary Herbs and Spices**, CBS Publishers, New Delhi, (2000).
8. **PDR for Herbal Medicines**, Medical Economics Company, New Jersey, Second Edition (2000).
9. Hson-Mou CHANG, Paul Pui Hay BUT, **Pharmacology and Application of Chinese Materia Medica**, Vol I and II, World Scientific Publishing cop (1983).
10. Iqbal Ahmad, Khan Usmanghani, **Analysis of Medicinal Compounds and Plant Drugs**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 165(2003).
11. Iqbal Azhar, Khan Usmanghani, **Essential Oils**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 324 (2002).
12. K. Usmanghani, **Herbal Medicine Industry in Pakistan**, Research Institute of Indusyunic Medicine, Karachi, Pakistan, pp 225(2000).
13. Kamal Masood Adhami, Syed Waseemuddin Ahmad, Khan Usmanghani, **Drug Analysis on H.P.L.C.**, Department of Pharmacognosy, University of Karachi, Karachi, Pakistan, pp.271 (1999).
14. 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, pp. 151 (1997).
15. K.Usmanghani, **Researches on Materia Medica**, Department of Pharmacognosy, University of Karachi, pp. 775(1997).
16. K.Usmanghani, Aftab Saeed, Tanweer Alam, **Indusyunic Medicine**, Department of Pharmacognosy, University of Karachi, pp. 601 (1997)
17. K.Usmanghani, Simin Shameel, **Index of Herb Drugs of Pakistan**, Department of Pharmacognosy, University of Karachi, Karachi, pp. 304 (1996).
18. K.Usmanghani, **Biologically Active Alkaloids and Glycosides**, Hamdard Foundation, Pakistan, Karachi, pp. 155 (1989).
19. K.Usmanghani, W.Miki, G.Honda, **Herbal Drugs and Herbalist in Pakistan**, Tokyo University of Foreign Studies, Tokyo, Japan, pp. 281 (1986).
20. K.Usmanghani, **Topics in Pharmacognosy**, University Grants Commission Monograph Series, Islamabad, pp. 74 (1985).

**MED-365 Mualijat (Medicine)-II (معالجات) (Theory)**  
**Semester–VI, (Credit Hours 3+1)**

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 laboratory support)

principles of medicine (management and dietary management) prognosis complications and preventions. Temperament of all diseases and relevant medicines with their temperament. Diagnosis of the disease should be taught with sua mizaj Madi also.

- 1) **Clinical examination of abdomen for liver and biliary disease.**
- 2) **Functional anatomy and physiology**(علم التشريح ووظائف الأعضاء وظيفية)
- 3) **Investigation of hepatobiliary disease** (التحقيق في أمراض الكبد)
- 4) **Presenting Complaints** (الشكاوى تقديم)
  - I. Jaundice(اليرقان)
  - II. Hepatomegaly(عظم الكبد)
  - III. Ascites (استسقاء)
  - IV. Hepatic encephalopathy (اعتلال الدماغ الكبدي)
  - V. Variceal bleeding (نزيف دوالي)
  - VI. Splenomegaly(عظم الطحال)
- 5) **Cirrhosis**(تليف الكبد)
- 6) **Infection and Liver disease**(العدوى وأمراض الكبد)
  - I. Viral Hepatitis (A,B,C,D,E and other form of hepatitis)
- 7) **HIV infection and Liver** (الإصابة بفيروس نقص المناعة والكبد)
- 8) **Alcoholic liver disease**(أمراض الكبد الكحولية)
- 9) **Non alcoholic fatty liver disease** (مرض الكبد الدهنية غير الكحولية)
- 10) **Drug , Toxin and the liver**(المخدرات، السمية والكبد)
- 11) **Inherited liver disease**(أمراض الكبد الموروثة)
  - I. Haemochromatosis(الاصطباج الدموي)
  - II. Wilsons disease (مرض ويلسون)
  - III. Alpha1 Antitrypsin deficiency (نقص ألفا 1 انتيتريبسين)
  - IV. Gilberts syndrome (متلازمة غيلبرت)
- 12) **Autoimmune hepatitis** (التهاب الكبد الذاتية)
- 13) **Intrahepatic biliary disease** (مرض الصفراوية داخل الكبد)
- 14) **Liver tumour and focal liver lesion**(ورم الكبد والكبد الأفة التنسيق)
- 15) **Vascular liver disease**(أمراض الكبد الوعائية)
- 16) **Pregnancy and liver** (الحمل والكبد)
- 17) **Liver transplantation**(زرع الكبد)
- 18) **Gall bladder and extrahepatic disease**(المثانة غال والمرض خارج الكبد)
- 19) **Diseases of Urinary System:** Renal insufficiency, Renal failure, Polycystic kidney, Nephritis, Nephrolithiasis, Renal colic, Cystitis, Vesical calculi, Sterangury, Urinary incontinence, Urinary retention, Enuresis (nocturnal), Bed wetting, Haematuria, Urethritis.
- 20) **Presenting problems in men**(تقديم مشاكل لدى الرجال)
  - I. Urethral discharge(التفريغ ا مجرى البول)
  - II. Genital itch and rash(حكة الأعضاء التناسلية والطفح الجلدي)
  - III. Genital ulceration (تقرح الأعضاء التناسلية)
  - IV. Genital lump(مقطوع الأعضاء التناسلية)
  - V. Proctitis (التهاب المستقيم)
- 21) **Sexually transmitted bacterial infection**
  - I. Syphilis(آتشك)
  - II. Gonorrhoea(سوزاك)

## 22) Sexually transmitted viral infection (المنقولة جنسيا عدوى فيروسية)

### Mualijat (Medicine) - II (معالجات) (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 4<sup>th</sup>, 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. C.R.W. Edward, and I.A.D. Boucher:Eds, **Davidsons Practice of Medicine**, BPC Publisher, London (1990).

### FMT-366 Forensic Medicine and Toxicology طب قانونی اور علم السموم (Theory)

#### Semester-VI, (Credit Hours 3+1)

1. **Forensic Medicine** طب قانونی: Introduction and definitions of forensic medicine, medical jurisprudence طبى فقه , legal prudence, inquest, courts, procedure in court, evidence ثبوت and type of evidence اقسام , dying declaration and dying deposition, physician in the witness box.
2. **Personal Identification** شخصى شناخت : Parameters of personal identity, methods of identifying living, dead, decomposed, mutilated and burnt bodies, and skeletal and fragmentary remains,
3. **Death** موت: Definition, stages of death موت کے درجات , signs of death علامات موت , cadaveric lividity, rigor mortis تصلب بعد الموت , putrefaction لعش میں تعفن , saponification عمل تصين , mummification تشمع , cadaveric spasm, types of death, syncope غشى , coma قوما , asphyxia حبس تنفس , hanging تعلیق , strangulation تغریق , suffocation , drowning تخنيق , sudden death causes اچانک

خود suicidal , حادثاتی موت types, accidental , مرگ تشدد violent death , موت کے اسباب گرمی (حرارت) heat , فاقہ سے موت death due to starvation , قتل عمد homicidal , کشمی ٹھنڈ (پرودت) سے موت and cold سے موت

4. **Traumatology:** Mechanical injuries: Injury and wounds زخم / جرح , abrasion , شقی یا منقطعہ , incised wounds , ممزقہ laceration , رض یا خدش bruise , جرح سحج punctured wounds - خزیہ , the student should be able to describe mechanism of wound production, classification of wounds produced by conventional weapons and their medico legal aspects اور زخم والے پیدا ہونے والے زخم اور روایتی ہتھیاروں سے پیدا ہونے والے زخم اور انکے قانونی پہلو . Firearmس ہتھیار , ammunition , گولہ بارود , classification, nomenclature, wound ballistics and medico legal aspects.
5. **Law Related to Medical Man:** Medical Ethics : طبئی اخلاقیات Privileges : حقوق , فرانس برائے طبی معالجین (استحقاق) and duties of medical practitioners , physician patient relationship, legal aspects of medical practice طبئی قانونی پہلو برائے طبی غفلت and medical negligence رضامندی consent , پریکٹس
6. **Toxicology** : علم السموم : Basic definitions, general principles, scope of toxicology, corrosive poisons : سموم اکالہ sulphuric acid : حامضات معدنی , nitric acid : حامض شورہ , hydrochloric acid : حامض ملحی , Organic Acids: oxalic acid : حامض اگریک , carbolic acid : حامض قطران , acetic acid : قلولیات : salicylic acids , hydrocyanic Acid, Alkalis : ammonia, caustic soda : نظرون کاوی , caustic potash : قلمی کاوی and calcium oxide : چونا
7. **Burn and Scald** : حرق و سلق : Definition, various systems of classification, Types: thermal, chemical, and electrical, ante mortem and post mortem burn اور بعد الموت اور قبل الموت , causes of death.
8. **Forensic Sexology and Relevant Sections of Law:** Student should be able to describe the approach to impotence و عنانت , determination of virginity دوشیزگی , pregnancy حمل and criminal process during delivery, their medico legal aspects, examination procedures and reporting.

### **Forensic Medicine and Toxicology (Practical)** : طب قانونی اور علم السموم

1. Model making of burns and scalds
2. Models/ charts of different poisons
3. Models/ charts of miscarriage
4. Methods of preservation of viscera
5. Model making of mechanical injuries
6. Chart of personal identification
7. Estimation of age and forensic radiology
8. Procedure of consent taking and medical certification
9. Medico legal examination of an injured patient

### **Visits**

1. Observation of postmortem (autopsy) at any government hospital
2. Visit of a psychiatric ward to observe cases of insanity
3. Visit of a burn ward to observe different types of burns and their management and medico legal importance

### **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. **Color Atlas of forensic medicine and pathology**, Chartes A Catanese, (2009)
6. **Cause of death: Forensic Files of Medical Examiner**, Stephen D Cohle and Tobin T Buhk
7. **Forensic Science: An Introduction to Scientific and Investigative Techniques, Third Edition (Forensic Science: An Introduction to Scientific & Investigative Techniques)**, Stuart James, Jon J. Nordby and Suzanne Bell
8. **Current Practice in Forensic Medicine**, John Gall and Jason Payne-James
9. **Simpson's Forensic Medicine**, Jason Payne-James, Richard Jones, Steven Karch and John Manlove
10. **Medicolegal Aspects of Care and Cure, Murkey, N, Progressive International Agencies (Pvt) Ltd**
11. Hakim Rizwan Ahmed, **Tibb-e-Qanooni**, Darul Talifat, Karachi (1990).
12. Hakim Rizwan Ahmed, **Kitab-al-Sammom**, Darul Talifat, Karachi (1985).
13. **Principles of forensic medicine including toxicology**, Apurba Nandy, NCBA
14. **Text book of Forensic Medicine and Toxicology**, Fifth edition, Krishan Vij
15. **Principles of Forensic Medicine including toxicology**, New Central Book Agency (Pvt) Ltd

## 7<sup>th</sup> and 8<sup>th</sup> Semester, BEMS Fourth Professional

Course Code	Course No.	Seventh Semester	Cr. Hr.
PAT	471	Pathology-II	3+1
SUR	472	Surgery-I	2+1
MTM	473	Materia Medica-III	3+1
GOS	474	Gynaecology-I	2+1
MED	475	Mualijat (Medicine)-III	3+1
PSY	476	Clinical Psychology and Psychiatry	3+1
<b>Total Course 6</b>			<b>16+6</b>

Course Code	Course No.	Eighth Semester	Cr. Hr.
PAT	481	Pathology-III	3+1
SUR	482	Surgery-II	2+1
MTM	483	Materia Medica-IV	3+1
GOS	484	Gynaecology-II	2+1
MED	485	Mualijat (Medicine)-IV	3+1
<b>Total Course 5</b>			<b>13+5</b>

**Total Credit Hours : 40**

### SEVENTH SEMESTER

**PAT-471 Pathology-II (Theory) (علم الامراض)**  
**Semester-VII, (Credit Hours 3+1)**

1. **Special Pathology: Disease of Heart** (امراض القلب); Hypertension ارتفاع ضغط (فشل القلب جانب اليمين), Rt sided heart failure (فشل القلب جانب اليمين), Left sided heart failure (فشل القلب جانب اليمين), Ischemic Heart Disease (مرض القلب الاقفارى), Angina Pectoris (الذبحة الصدرية), Myocardial Infarction (احتشاء عضلة القلب),
2. **Congenital heart disease** (امراض القلب الخلقية) **VSD** (عييب العاجز البطنى), **PDA** (الفتوات رباعية فالومن (تعريف فقط) Tetralogy of fallot), ASD (عييب الحاجز السابق), الشريانية البراءة), Coarctation of aorta (تعريف), Rheumatic fever and rheumatic heart disease (الحمى الروماتيزمية و امراض القلب الروماتيزمية), Infective Endocarditis (التهاب التهاب عضلة القلب), **Cardiomyopathy** (اعتلال عضلة القلب), Myocarditis (التهاب العضلة القلبية), الشغاف المعديّة), Dilated (تعريف فقط), Hypertrophic (تعريف فقط), (الضخامى (تعريف فقط), Restrictive (تعريف فقط), **Disease of Blood Vessel** (الامراض الاوعية الدموية); Atherosclerosis (تصلب الشرايين), Raynauds disease (مرض راينودس), Varicose Vein, Phlebothrombosis and Thrombophlebits (دوالى الاوردة، خثار وريدى و التهاب الوريد العرقلة من اعلى (cause) Obstruction of Superior and Inferior Vena Cava (الخثارى) وادنى الوريد الاجوف (قضية)
3. **Disease of Blood and Lymphoid System** (مرض نظام الدم و النظام اللمفاوى); Blood loss Anemia (فقر الدم فقدان الدم), Hemolytic Anemia (فقر الدم الانحلالي), Hereditary

spherocytosis(كثرة الكريات الحمر الكروية الوراثية), Sickle cell Anemia(الانيميا المنجلية), G6PD deficiency Anemia(الانيميا ديفيسينسي), Thalassaemia(الثلاسيميا), Erythroblastosis fetalis(فيتاليس اريثروبلاستوسيس), Malaria(الملاريا), Iron deficiency anemia(فقر الدم بعوز الحديد), Folate (folic acid) deficiency anemia (فقر الدم بعوز الفولات) B12 او فقر الدم الخبيث) B12 deficiency anemia or pernicious anemi (فقر الدم الخبيث), حمض الفوليك (فقر الدم بعوز الفولات), Aplastic anemia(فقر الدم اللاتسجي), Polycythemia(يشيميا پولى), Leucopenia, Lymphoma(سرطان الغدد الليمفاوية), Non-Hodgkin Lymphoma(لمفوما هودجكن), Hodgkin lymphoma(ورم الغدد الليمفاوية غير هودجكن), Acute leukemia(اللوكيميا الحادة), Acute myeloid leukemia(ابيضاض الدم النقوى الحاد), Acute Lymphoblastic leukemia(ابيضاض الدم الليمفاوى الحاد), Chronic leukemia(ابيضاض الدم النقوى الزمن), Chronic myeloid leukemia(المزمن), Chronic lymphoblastic leukemia (ابيضاض الدم الليمفاوى المزمن), Polycythemia vera (فقر الدم بعوز الصفائح)(موجز), Idiopathic thrombocytopenic purpura(البرفرية), Thrombotic thrombocytopenic purpura(التهاب الرؤى البكتيرى), Thrombocytopenia (Brief)(موجز), Kثره الحميرى (موجز), (الصفائح الخثرية); **Respiratory System**(الجهاز التنفسى); Obstructive lung disease (cold)(مرض انسداد الرئة الباردة), Asthma(الربو), Emphysema(انتفاخ الرئة), Chronic Bronchitis(التهاب الشعب الهوائية المزمن), Bronchiectasis(القصبات), Adult Respiratory Distress Syndrome (متلازمة الضائقة), Pulmonary thromboembolism(الجلطات الراوية), Haemorrhage and Infarction(التهاب الرؤى البكتيرى), Acute Bacterial pneumonia (احتشاء), (هيمراج و احتشاء), Primary atypical pneumonia (التهاب الرؤى atypical), (التهاب الرؤى atypical), Secondary T.B (السل), Primary T.B (السل الابتدائى), Tuberculosis(السل), Lung Abscess(خراج الرئة), Bronchogenic Carcinoma(سرطان قصبية المنشاء), Pleumitis Pleutitis (التهاب الجنبى), (الانصباب الجنبى), (تعريف) of Pleural Effusion, (سرطان صدر مدمى), Hemothorax, (استرواح الصدر), Pneumothorax, (بليوميتيس), Chylothorax(جود الكليولوس فى الصدر), **Oral Cavity**; Developmental Anomalies(الشذوذ التتموية), Infections(التهابات), Bacterial and Fungal Infections(العدوى البكتيرية و الفطرية), Viral Infection(العدوى الفيروسية), Benign Tumors(اورام حميدة), Peripheral giant cell granuloma (Brief)(الورم الجيبى ذو الخلايا), Oral hairy leukoplakia (Brief)(موجز), (طلوان شعرشغوى), (موجز), Leukoplakia(طلوان), Squamous Cell Carcinoma (Brief)(السرطان الخلايا الحرشفية), Dental Carries(تسوس الاسنان), Periodontal Disease(امراض اللثة), (موجز), 4. **Gastrointestinal Diseases**(الامراض المعوية المعدية); Esophagitis+ Reflux (التهاب مرى+ ارتداد المرى), ارتجاع تبيين شريان الرجل ووجود التهاب بالمرى), Esophagitis(التهاب مرى), Acute and Chronic(الحاد و المزمن), Gastritis(التهاب المعدة), Stress Ulcer(قرحة الضغط), Peptic Ulcer(قرحة معدى و اثناء عشرى), Duodenal, Gastric(المعدة), Gastric Carcinoma (Brief)(سرطان المعدة)(موجز), Inflammatory Bowel Disease(فحص سائل), Crohn's disease(مرض كروهن التهاب مزمن للجهاز الهضمى), Ulcerative Colitis(التهاب القولن التقرحى), Infective Enterocolitis (Only causes) (التهاب القولن التقرحى), Mal absorption syndrome (متلازمة سوء امتصاص), (اسباب فقط) عددى الامعاء (ذرب المدارية), Celiac sprue(ذرب الزلاقى), Disaccharide DeficiencyTropical sprue(التهاب زائدة الدودية), Hemorrhoids(البواسير).

## Pathology-II (Practical)

Semen Examination(فحص المنى), Cerebrospinal Fluid Examination(فحص السائل), Pericardial fluid examination(فحص سائل و تجوييف), Pleural Fluid Examination(فحص سائل جنب القلب), Ascitic Fluid Examination(فحص سائل جنب البطن), Blood Sugar(فحص سائل جنب البطن), (الجنبة)

((سكردم), Blood Urea(يوريا الدم), Blood Cholesterol(مستويات الكولسترول فى الدم) etc., Techniques of Clinical Blood Examination for various diseases (تقنيات فحص الدم فى مختلف الامراض), Gastric Analysis(تحليل معدية), Tests for liver function test(اختبارات و وظائف الكبد), Renal function test(اختبار و جود الغدد الصماء), Tests for endocrine abnormalities(اختبار و جود الغدد الصماء), Biopsies and cytologic techniques (تقنيات فحص نسيج الجسد و خاص بعلم الخلايا).

### Recommended Books:

1. Kumar Cotran Robins, **Pathologic Basis of Diseases**, W.B.Saunders Company, Philadelphia.
2. Kumar Cotran Robins, **Basic Pathology**, W.B.Saunders Company, Philadelphia.
3. Walters and Israel, **General Pathology**, Churchill Livingstone, London.
4. Peter S. Macfarlane, Robin Reid, Robin Collander, **Pathology Illustrated**, Churchill Livingstone, London.
5. Jawetiz, **Medical Microbiology and Immunology**, Churchill Livingstone, London.

### SUR-472 Surgery-I (Theory) (ابصراحة)

#### Semester-VII, (Credit Hours 2+1)

1. **Introduction of Surgery:** Basic surgical principles
2. **Esophagus:** Diseases causing esophageal obstruction, congenital atresia of esophagus, Hiatus hernia (فتق مرى a and types of hiatus hernia). Carcinoma of Esophagus (سرطان مرى)  
**Stomach and duodenum:** Hypertrophic pyloric stenosis of infants: Signs, Symptoms and treatment, Peptic Ulcer: (قرح مدى واثناء عشرى) Signs, symptoms and treatment from surgical point of view and management of perforated peptic ulcer, Haematemesis (قيء الدم) and Malena: (براز دموى) Causes and management, Gastric Cancer: (سرطان معدى) Causes, pathology, signs and symptoms, classification, investigation, diagnosis and management,
3. **Liver:** Trauma, Obstructive jaundice, (يرقان سدى) Causes of enlargement of liver,  
Amoebic liver abscess: (دبيلة الكبداميبياى) Pathology, course, signs, symptoms and treatment, Hydated disease (كيسة الكبد) of the liver. Source of infection, pathology, signs, symptoms, treatment and complications, Tumors of liver: Benign and malignant. (سرطان كبد)
4. **Spleen:** Rupture of spleen and its treatment, Causes of enlargement of spleen (عظم طحال) and indications for splenectomy and postoperative complications.
5. **Gall Bladder and Bile Ducts:** Investigations 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 stones (Cholelithiasis): Types, incidence and factors causing gall stone formation, complications of gall stone, acute obstructive cholecystitis, acute non obstructive cholecystitis, chronic



cholectystitis, ورم/التهاب مراره Stone in the bile ducts and management of biliary obstruction due to stone.

6. **Pancreas:** Acute, relapsing and Chronic Pancreatitis ورم/التهاب بانقراس, Pancreatic masses including Neoplasia (Benign and Malignant), Carcinoma of Pancreas سرطان بانقراس .

## **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**, 26<sup>th</sup> Edition, Chapman and Hall Medical, London (2013).
2. S. Das, **Handbook of Clinical Surgery**, 6<sup>th</sup> Edition, Dr. S. Das, Calcutta (2003).
3. Schwartz, S. Spencer, **Principle of Surgery**, 5<sup>th</sup> Edition, Monotype Composition Co., Yale (1989).
4. Richard M. Stillman, **General Surgery**, 3<sup>rd</sup> Edition, Prentice Hall International Inc. New Jersey (1988).
5. Altaf Hussain Rathore, **Short Text Book of Surgery**, Vol. I and II, 1<sup>st</sup> Edition, Ilmi Kitab Khana, Lahore (1982).
6. Bruce E. Jarrell and R. Anthony Carabasi, **NMS–Surgery**, 2<sup>nd</sup> 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**, 5<sup>th</sup> Edition, Lange Medical Publication, California. (1973).
10. K. Das, **Clinical Methods in Surgery**, 12<sup>th</sup> Edition, Prince Book Depot, Lahore (1984).
11. Hamilton Bailey's, **Demonstration of physical signs in Clinical Surgery**, 15<sup>th</sup> Edition, John Wright and Sons Ltd., Birmingham (1973).
12. Anis Ismail, **Jarahat-e-Amliah Sagheera**, 1<sup>st</sup> Edition, Ajmal Khan Tibbia College, Aligarh (1995).

13. Tafseer Ali and Anees Ismail, **Ilmul Jarahat in the Light of History**, 1<sup>st</sup> 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**, 1<sup>st</sup> Edition, Islami Burqi Press, Lucknow (1940).

### **MTM-473                      Materia Medica-III (Theory)** **Semester-VII, (Credit Hours 3+1)**

1. **Systemic Action of Drugs**(تأثير الادويه على الجهاز): Study of selected Unani drugs or bioactive natural products affecting the different systems of the body for curative and preventive actions.
2. **Digestive System**(نظام الهضم): Emetics (مقيى) , Antiemetics(مضاد للقيء), Purgatives(مسهل), Treatment of Peptic Ulcer e.g (علاج قرحة المعدة) *Rheum palmatum* (ريوندچينى), *Strychnous nux-vomica* (ازراقى), *Croton tiglium* (جمال گوٹہ), *Glycyrrhiza glabra* (مليٹھی), *Zingiber officinalis* (زنجبيل), *Swertia cheraita* (چرائتہ), *Cinnamomum zeylanicum* (تاج), *Hordeum vulgare* (جو), *Citrus aurantifolium* (ترنج), *Melia azadirachta* (Bakain), *Areca catechu* (سپارى), *Mentha piperita* (پودينه).
3. **Central Nervous System**(الجهاز العصبى المركزى): Disorders of CNS (اضطراب الجهاز العصبى), Sedative(مسكن), Hypnotic(منوم), Antiepileptic(مضاد الصرع) drugs, General and local anesthetics(التخدير العام و التخدير الموضعى), Skeletal muscles relaxant(ارتخاء العضلات الهيكل العظمى), Treatment for Parkinsonism(علاج الرعاش), Antipsychotic agents(المضادة للذهان), Opioid analgesics(المسكن الافيونية), Antagonists(مضاد) Drug of abuse(تعاطى المخدرات), e.g. *Strychnous nux-vomica* (ازراقى), *Gentiana manshurica* (جنثيانا), *Paeonia suffruticosa* (types of ood saleeb), *Aconitum carmichalia* (types of bichnak), *Datura stramonium*, *Rouwolfia serpentina* (السرول) *Thevetia nerrifolia* (kaneer sufaid), *Ziziphus jujuba* (عناّب), *Asarem hetrotropoides* , *Bombyx mori* (ابریشم).
4. **Hormones and Endocrine System**(الهormونات والغدد الصماء): Introductory aspect and knowledge of hypothalamic and pituitary hormones, side effects of thyroids and anti thyroid drugs(علاج الغدة الدرقية), *Albizzia lebbek* (سرس), Adrenocorticosteroids, *Glycyrrhiza glabra* (مليٹھی) and Adrenocortical antagonists, Gonadal hormones and inhibitors, *Rosa damascena*(گلاب), *Cyperus rotandus* (ناگرموتها), pancreatic hormones and anti diabetic drugs(مضاد الداء السكرى), *Gymnema sylvester* (گرمار بوٹى) *Momordica charantia* (كربلا), *Melia azadirachta* (نيم), *Hordeum vulgare* (جو), agents that effect bones and minerals homeostasis(التوازن), and osteoporosis(هشاشة العظام), e.g. *Boerhavia repens*.

### **Materia Medica-III (Practical):**

1. Introduction and in detail study of *Ephedra vulgaris* (سوم کلپا)
2. To study and demonstrate herbal cardiotonics e.g. *Digitalis purpurea* (*digitalis*), *Terminalia arjuna* (ارجن)
3. To study and demonstrate the herbal laxatives (ملین) e.g. *Aloe barbadensis* (ایلوا)، *Castor oil* (روغن ارنڈ)، *Plantago ovata* (اسپغول)، *Cassia senna* (سنا مکی)
4. To study and demonstrate the herbal antihypertensive agents e.g. *Rauwolfia serpentina* (السرول)

**Note:** Study tour to various Pharmaceutical Industries in various part of the country will be an integral part of syllabi.

### **Recommended Books:**

1. Hson-Mou CHANG, Paul Pui Hay BUT, **Pharmacology and Application of Chinese Materia Medica**, Vol I and II, World Scientific Publishing cop (1983).
2. E. Tyler, Lyn R. Brody, James E. Robess, **Pharmacognosy and Biotechnology** Lea and Febiger, Philadelphia (1991).
3. Tibbi Pharmacopia
4. Hamdard Pharmacopia
5. Monographs

### **GOS-474 Gynaecology-I (Theory) (علم النساء ) Semester-VII, (Credit Hours 2+1)**

1. **Anatomy:** Introduction description of genital organs development of female genital organs. (تشریح اعضاء تناسلیہ اور غیرطبی شکلیں)
2. **Physiology** (افعال اعضاء تناسلیہ): Puberty and adolescent menopause سن و بلوغت و یاس 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 differential diagnosis of pregnancy. Minor gynecological operative procedures.
3. **Hormones** (ہارمونز): Description of different hormones, hormone replacement therapy (HRT) (ہارمون سے علاج) .
4. **Changes in menstrual cycle** (دوران طمث): Menstrual abnormalities (فتورات (تحت الطمث), amenorrhea (طمث احتباس), hypomenorrhoea (طمث تحت), dysmenorrhoea (عسر طمث), oligomenorrhoea (طمث قلت), polymenorrhoea (تعدد طمث), dysfunctional uterine bleeding (نزف الرحم عسر الوظيفی), postmenopausal bleeding (نزف الرحم بعد سن یاس).
5. **Vaginal Diseases** (امراض مہبل): Leucorrhoea (vaginal discharge) inflammation (التهاب مہبل) of vagina (gonorrhoeal tuberculosis and syphilitic and cystic) abscess of vagina tumor of vagina, vesico-vaginal fistula and recto-vaginal fistula cystocoele rectocoele (genital prolapse) vaginismus.

6. **Diseases of Uterus** (امراض رحم): Endometritis acute and the chronic erosion tumor of the uterus fibroids adenoma cancer.
7. **Diseases of Cervix:** Inflammation, tumors.
8. **Diseases of Fallopian Tubes**(امراض قاذفين و خصية الرحم): Salpingitis acute and chronic(التهاب قاذفين), abscess of fallopian tube tumors of fallopian tube.
9. **Genital Tract Infection**(اعضاء تناسليه كى ضربات) : Infection of upper genital tract infections of lower genital tract genital tuberculosis.
10. **Displacement of Uterus:** Prolapse of uterus(انزلاق رحم), retroversion inversion of uterus(انقلاب الرحم), causes diagnosis management and treatment.
11. **Gestational Trophoblastic Diseases:** Hydated form mole trophoblastic tumors.
12. **Miscellaneous Gynecological Disorders:** Dysparunia dysmenorrhoea backache pelvic diseases hysteria leukoplakia pelvic floor injuries.

### **Gynaecology-I (Clinical):**

1. Students to examine out door indoor patients.
2. Take history and to get complete information about diagnosis and treatment.
3. All the instruments issued in gynecological examination should be recognized and their uses known.
4. Conduction of gynecological test

### **Recommended Books:**

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

### **MED-475 Mualijat (Medicine)-III (معالجات) (Theory)** **Semester-VII, (Credit Hours 3+1)**

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 laboratory support) principles of medicine (management and dietary management) prognosis complications and preventions.

1. **Skin Disease**(مرض جلد)
  - I. Eczema(الأكزيما)
  - II. Psoriasis and other erythematous scaly eruptions(الصدفية وغيرها من ثورات متقشرة حمامية)
  - III. Lichen planus and lichenoid eruptions(الحزاز المسطح والانفجارات الحزازاني)
  - IV. Urticaria(الشرى)
  - V. Acne and rosacea(خامسا حب الشباب والوردية)
  - VI. Common skin infections and infestations(الالتهابات الجلدية شيوعا وتفشي)

- VII. Bullous disorders(اضطرابات فقاعية)
- VIII. Skin tumors(أورام الجلد)
- IX. Leg ulcers(قرحة الساق)
- X. Hair disorders (أمراض الشعر)
- XI. Nail disorders(أمراض الأظافر)
- 2. Infectious disease(الأمراض المعدية)**
  - I. viral disease(مرض فيروسي)
  - II. Bacterial(البكتيرية)
  - III. Protozoal(طفيلي)
  - IV. Infection caused by helminthes(العدوى الناجمة عن الديدان الطفيلية)
  - V. Ectoparasites(الطفيليات الخارجية)
  - VI. Fungal(الفطرية)
- 3. Musculoskeletal disorder(اضطراب العضلات والعظام)**
  - I. Osteoarthritis(هشاشة العظام)
  - II. Inflammatory joint disease(المرض الالتهابي في العظام)
  - III. Fibromyalgia(فيبروميالغيا)
  - IV. Systemic connective tissue disease(أمراض النسيج الضام الجهازية)
  - V. Systemic vasculitis(التهاب الأوعية الجهازية)
  - VI. Disease of bone(مرض العظام)

### **Mualijat (Medicine)-III (معالجات) (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, **Hazique**, 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,(C.R.W. Edward, and I.A.D. Boucher:Eds),BPC Publisher, London(1990).

**PSY-476 Clinical Psychology (علم النفس) and Psychiatry (الطب النفسي) (Theory) نظرية**  
**Semester-VII, (Credit Hours 3+1)**

**Psychology (علم النفس)**

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

1. **Growth and Development (النمو والتنمية):** Infancy and childhood, stages of cognitive, moral reasoning development, Erickson's Psycho-social developmental stages, Personality development in early childhood --- changes during adolescent to adult years.
2. **Motivation (الدافع) and Emotion (انفعال):** Basic motives: Biological and Psychological, Instinctual behavior: Theories about it, Emotional development: Infancy to adult years: Determinants of emotional behaviors.
3. **Personality (الشخصية):** Definition, Characteristics of Personality: Theories about personality, Assessment of Personality.
4. **Consciousness (وعي), Sleep (النوم) and Dreams (حلم):** Stages of consciousness: Psychoanalytic aspect, Sleep: patterns, Dreams, significance
5. **Learning (تعلم) and Memory (ذاكرة):** Classical conditioning, operant conditioning, other types of learning, Short term memory, long term memory.
6. **Stress (ضغط عصبي):** Definition: Types, Reaction to stress, Psychological/Physiological.
7. **Intelligence (ذكاء):** Definition: Intelligence assessment test

**Psychiatry (الطب النفسي)**

1. **Classification of Psychiatric Disorder (Brief Review)**
2. **Psychiatric Treatment Modulates, With Objectives**
3. **Psychiatric Disorders (اضطرابات نفسية) (Symptoms, Etiology):** *Neurotic disorders* (اضطرابات العصبية); Generalized Anxiety disorder (اضطراب القلق المعمم), Phobia (رهاب), Hysteria (هستيريا), *Mood disorders* (اضطرابات المزاج); Depression (حزن), Mania (المس ضرب من الجنون), *Psychotic disorders* (اضطرابات نفسية); Schizophrenia (انفصام في الشخصية), *Psychosomatic disorders* (اضطرابات نفسية); *Organic disorders* (اضطرابات العضوية); Delirium (بهذيان), Dementia (مرض التخلف العقلي), Amnestic disorders (اضطرابات مفقد عقلي), Epilepsy (صرع), *Personality disorders* (تقلبات الشخصية), *Mental retardation* (التخلف العقلي); *Psychosexual disorders* (اضطرابات نفسية); *Drug Dependence* (إدمان المخدرات).

**Clinical Psychology (علم النفس) (Practical) عملي:**

- Clinical evaluation based orientation and viva voce of theory course for the practice of Psychology.

- 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**

**Psychiatric Disorders** (اضطرابات نفسية): Symptoms etiology and treatment, Generalized anxiety disorder اضطراب القلق المعمم, Phobia (رهاب), Hysteria (بستيريا), Melancholia المالنخوليا السوداء, Depression (حزن), Mania (المس ضرب من الجنون), Psychosomatic disorders الاضطرابات النفسية, Psychological aspect of cardiovascular disorders الجانب النفسي لاضطرابات القلب والأوعية الدموية, gastro-intestinal disorders اضطرابات الجهاز الهضمي, Psychosexual disorders اضطرابات نفسية, Psychiatric aspect headache, صداع الراس, dizziness دوخة, vertigo دوار, Stress disorder اضطراب الإجهاد, Neurasthenia النوراستينيا النهك العصبي, Organic disorder اضطراب عضوي, Psychiatric disorders in child hood الاضطرابات النفسية في طفولة, Mental hygiene الصحة النفسية,

### **Recommended Books:**

1. Ernest Hillguard, **Introduction to Psychology**, 12<sup>th</sup> Edition, Harcourt Brace College publishers (1996).
2. Handbook of **Behavioural Sciences for Medical & Dental Students**, by Mowadut H. Rana.
3. Oxford Textbook of Psychiatry.
4. DSM V criteria (Diagnostics Statistical manual of mental disorders, 5<sup>th</sup> edition.
5. Barbra Fadem, **BRS Behavioural Sciences**, CBS Press (1994).
6. Richard Gross, **Psychology, The Science of Mind and Behaviour**, 4<sup>th</sup> Edition Hodder and Stroughton (2001).
7. Richard Mayo, **Shorter Oxford Text Book of Psychiatry**, 4<sup>th</sup> Edition, Oxford University Press, London (2001).
8. James, H. Scully, **NMS Psychiatry**, 3<sup>rd</sup> Edition, national Medical Series, Washington(1998).
9. M.D. Kaplan, **Synopsis of Psychiatry**, 7<sup>th</sup> Edition, William and Wilkins, Baltimore(1996).
10. Williams and Wilkins, **Behavioral Sciences**, Baltimore Publications, USA (1987).
11. M.Asghar, **Introduction to Psychiatry**, Printing Corporation of Pakistan Press, Islamabad (1981).
12. Donald W. Goodwin, Samuel B. Guze, **Psychiatric Diagnosis**, Oxford University Press, London (1996).
13. J. Scotttrutan, **Psychotherapy**, Gulford Press, New York (1992).

## EIGHT SEMESTER

### PAT-481 Pathology-III (Theory) (علم الامراض) Semester-VIII, (Credit Hours 3+1)

**Liver and Biliary Tract** (الكبد و المسالك الصفراوية); Jaundice (Causes and Normal physiology) (فرط بيليروبين الدم), Hyperbilirubinemia (اليرقان (اسباب و فيزيولوجيا العادي)), Conjugated (مترافق), Unconjugated (غير مترافق), Viral Hepatitis (التهاب الكبد الفيروسي), Causes (الاسباب), Main Complication (المضاعفات الرئيسية), Types (انواع), Cirrhosis associated with alcohol abuse (تليف الكبد اساءة استعمال الكحول), Post necrotic cirrhosis (تليف كبد بعد نخر), Biliary Cirrhosis (Primary and Secondary) (تليف الكبد الصفراوى (الابتدائية و ثانوى)), Pigment Cirrhosis (hemochromatosis) (تليف الكبد الصباغ (داء ترسب الاصبغة)), Cirrhosis associated with Wilson disease (تليف الكبد المرتبطة بمرض ويلسون), Cirrhosis associated with antitrypsin deficiency (تليف الكبد المرتبطة بنقص antitrypsin), Carcinoma of Liver (سرطان الكبد), Cholangitis and Liver abscess (تشنوليليشيا حاد و مزمن), Cholelithiasis, Acute and Chronic (ديبيله كبد), (Diabetes Mellitus (مرض البول اسكرى); Acute and Chronic pancreatitis (التهاب بانقراس (حاد و مزمن), (التهاب بانقراس), (مرض الكلى);

#### **Diseases of Kidney** (مرض الكلى);

Nephrotic Syndrome (المتلازمة الكلوية), Nephritic Syndrome (اعراض الالتهاب الكلوى), Tubulo Interstitial Nephritis (التهاب الكلية الخلالى توبولو), Acute Pylonephritis (التهاب الكلية الخلالى الحاد), Acute drug induced interstitial nephritis (التهاب الكلية الخلالى الحاد), Chronic analgesic Nephritis (التهاب الكلى المزمن فى مسكن), Acute tubular Necrosis (نخراتوبوى حاد), Hypertension due to kidney (ارتفاع ضغط الدم بسبب الكلى), Renal Stones (الحجاره), Renal Cell Carcinoma (Brief), Wilm's Tumor (Brief), Acute and Chronic Cystitis (التهاب المثانة الحاد انه المزمن), Polycystic disease (مرض تكيس).

**Disease of Male Genital System** (مرض نظام الاعضاء التناسلية للانث الذكور); Epididymitis & Orchitis+ Urethritis and Prostatitis (التهاب الاحليل التهاب البربخ و الخصيتين), Benign Prostate Hyper plasia (فرط البروستاتا حميدة), Carcinoma of Prostate (سرطان البروستاتا), sq. cell Ca. of penis (التهاب البروستاتا), (للتظهير الشعاعى للخلايا من العضو الذكرى),

**Disease of Female Genital** (مرض الجهاز التناسلى للاناث); Cervicitis (التهاب عنق الرحم), Endometritis (التهاب بطانة الرحم), Dysfunctional Uterine Bleeding (معطلة نزيف الرحم), Endometrial Hyper plasia (فرط بطانة الرحم), Squamous Cell Carcinoma of Cervix (التهاب البوق), Leiomyoma (ورم عضلى امليس), Salpingitis (التهاب البوق), Polycystic Ovary Syndrome (متلازمة المبيض), Carcinoma of Ovary (سرطان المبيض), Hydati form Mole (شكل الخلد), (تسبب انواع), (Causes + Types),

**Disease of the Breast** (الامراض پستان الثدي); Juvenile Hypertrophy (تضخم الاحداث), Acute Mastitis and Abscess (التهاب الضرع الحاد و الخراج), Fibrocystic Changes (تغييرات), Cancer of the Breast (سرطان الثدي), (فيبروكيستيك),

**Disease of Endocrine System** (امراض الغدد الصماء); Pituitary Gland (الغدة النخامية), Hypopituitarism (قصور الغدة), Hypothyroidism (هايبيربيوتيتاريسم), Congenital hypothyroidism (الدرقية), Primary hypothyroidism (هدبوتيروديسم الابتدائى), Hyperthyroidism (فرط الدرقيه), Simple and diffuse goiter (تضخم الغدة الدرقيه بسيطة و تشرها), Multinodular goiter (دراق), Hashimoto's Thyroiditis (الدرقية), Sub-Acute Thyroiditis (الدرقية),



thyroiditis(الدرقية دون الحاد), Chronic Thyroiditis (الدرقية المزمنة) , Adenoma (الورم الحبيبي), Carcinoma (الحميد), Papillary (حليمي), Follicular (جرابي), Anaplastic (المتحولة), Primary hyperparathyroidism (باراثيرويديسم فرط الابتدائي), Secondary hyperparathyroidism (باراثيرويديسم فرط ثانوي), Hypoparathyroidism (قصور باراثيرويديسم), Cushing Syndrome (متلازمة كوشينغ), Hyperaldosteronism (فرط الدوسيرونيسم), Addison Disease (مرض اديسون).

### Pathology-III (Practical):

Acute inflammation, Chronic inflammation, Chronic specific inflammation, Different types of Degeneration, Thrombosis, Embolism, Infarction, necrosis, Gangrene, Hyperplasia, Metaplasia, Pigmentation, Calcification, C.V.C., 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.

### Recommended Books:

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

### SUR-482 Surgery-II (Theory) (ابصراحة) Semester-VIII, (Credit Hours 2+1)

1. **Peritoneum:** Acute and chronic peritonitis: ورم/التهاب باريطون Causes, investigations, treatment, and complication, Tuberculous peritonitis.
2. **Small and Large Intestine:** Primary megacolon: عظم قولون/امعاء كبيرة Causes, signs, symptoms. Investigation and treatment, Ulcerative colitis: ورم/التهاب قولون قروحي causes, signs, symptoms, investigations and treatment, Malignant cancer of colon. سرطان قولون.
3. **Intestinal Obstruction:** Acute intestinal obstruction: سدة امعاء حادة Dynamic and A dynamic, causes, signs. Symptoms, investigation and treatment, Paralytic ileus: Types, causes signs, symptoms and management.
4. **Vermiform Appendix:** Acute appendicitis: ورم زانده دوديه حاد and appendicular mass.
5. **Rectum:** Congenital Abnormalities: Imperforate anus, Proctitis, ورم مقعد Cancer of rectum: سرطان معاء مستقيم: Causes, classification, signs, symptoms investigations and treatment.
6. **Anus and Anal Canal:** Pilonidal Sinus, Anal fissure, شقاق مقعد, Haemorrhoids, بواسير دموي, Anal Fistula, مقعد ناسور, Anorectal Abscess.

7. **Hernia Complete:** Inguinal hernia, فتق الامعاء كنج رانی, Femoral hernia, Umbilical hernia and Para umbilical hernia and Incisional hernia. فتق الامعاء بطنية

## **Surgery-II (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. Anaesthetic 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**, 26<sup>th</sup> Edition, Chapman and Hall Medical, London (2013).
2. S. Das, **Handbook of Clinical Surgery**, 6<sup>th</sup> Edition, Dr. S. Das, Calcutta (2003).
3. Schwartz, S. Spencer, **Principle of Surgery**, 5<sup>th</sup> Edition, Monotype Composition Co., Yale (1989).
4. Richard M. Stillman, **General Surgery**, 3<sup>rd</sup> Edition, Prentice Hall International Inc. New Jersey (1988).
5. Altaf Hussain Rathore, **Short Text Book of Surgery**, Vol. I and II, 1<sup>st</sup> Edition, Ilmi Kitab Khana, Lahore (1982).
6. Bruce E. Jarrell and R. Anthony Carabasi, **NMS–Surgery**, 2<sup>nd</sup> 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**, 5<sup>th</sup> Edition, Lange Medical Publication, California. (1973).
10. K. Das, **Clinical Methods in Surgery**, 12<sup>th</sup> Edition, Prince Book Depot, Lahore (1984).
11. Hamilton Bailey's, **Demonstration of physical signs in Clinical Surgery**, 15<sup>th</sup> Edition, John Wright and Sons Ltd., Birmingham (1973).
12. Anis Ismail, **Jarahat-e-Amliah Sagheera**, 1<sup>st</sup> Edition, Ajmal Khan Tibbia College, Aligarh (1995).

13. Tafseer Ali and Anees Ismail, **Ilmul Jarahat in the Light of History**, 1<sup>st</sup> 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**, 1<sup>st</sup> Edition, Islami Burqi Press, Lucknow (1940).

### **MTM-483                      Materia Medica-IV (Theory)** **Semester–VIII, (Credit Hours 3+1)**

1. **Effects of Chemotherapeutic Drugs**(تأثير الدوية لعلاج الكيمياء): Introduction and knowledge of side effects of Antibiotics(مضاد حيوى), Antimicrobial; *Berberis vulgaris* (رسوت) (darehald), *Rheum palmatum*, (ريوندچينى) *Croton tiglium* (جمال) (*Euphorbia humours* (type of thohar), *Raphanus sativus* (مولى), *Ricinus communis* (اژند), Antifungal; *Rheum palmatum* (ريوندچينى), Antiviral; *Mentha arvensis* (پودينه), Antiparasitic, Antiprotozoal; *Allium sativum* (لہسن), Antihelminthecs; *Azadirachta indica* (نيم), *Quercus infectoria* (مازو), *Areca catechu* (سپارى) and Antineoplastic drugs; *Prunus armeniaca* (خوبانى), *Curcuma zedoaria*, *zarambad*, *Catharanthus roseus*(سدا بهار), *Curcuma longa* (بلدى).
2. **Arthritic and Musculoskeletal Disorders**(اضطراب العضلات و العظام): Drugs used in gout(الدوية النقرس), 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).
3. **Clinical Materia Medica**(الصيدلة السريرية): Introduction(تعريف), 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, pharmacodynamics and drug disposition in pregnant women(النساء الحوامل), neonates (وليد) and children(اطفال), teratogenesis(امساخ).

### **Materia Medica-IV (Practical):**

1. To study and demonstrate the effect of drugs on Frogs heart by using Kymograph e.g. *Adrenaline*, *Acetylcholine*, *Atropine*.
2. To study and demonstrate the herbal anti-rheumatics e.g. *Commiphora mukul* (گوگل), *Colchicum autumnale* (سورنجان شيرين).
3. To study and demonstrate herbal: Diuretics(مدر البول), Antitumour(مضاد الورم), Antidiabetics(مضاد الداء السكرى), Antitussives e.g. *Cinchona*, *Tribulus terrestris* (گھوکرو) *Pterocarpus santalinus* (صندل سرخ) *Adhatoda vasica* (اژوسه), *Ocimum sanctum* (تلسى)

4. To study and demonstrate herbal compound preparations e.g. *Dawa-ul-misk*(دواء المسك), *Different khamira* (خميره)etc

**Note:** Study tour of various Pharmaceutical Industry in various part of the country will be an integral part of the syllabus

### **Recommended Books:**

1. Hson-Mou CHANG, Paul Pui Hay BUT, **Pharmacology and Application of Chinese Materia Medica**, Vol I and II, World Scientific Publishing cop (1983).
2. E. Tyler, Lyn R. Brody, James E. Robess, **Pharmacognosy and Biotechnology** Lea and Febiger, Philadelphia (1991).
3. Tibbi Pharmacopia
4. Hamdard Pharmacopia
5. Monographs

### **GOS-484 Gynaecology-II (Theory) ( علم النساء )** **Semester–VIII, (Credit Hours 2+1)**

1. **Vulval Diseases:** Inflammation (primary and secondary), pruritus vulva (حكته الفرج), abscess tumors of vulva, vulvae lesions.
2. **Diseases of Ovaries**(امراض خصية الرحم): Oophritis(التهاب خصية الرحم), (acute and chronic) abscess tumors and cysts of ovaries.
3. **Diseases of Urethra:** Retention of urine cystitis (acute and chronic) stricture.
4. **Diseases of Mammary Glands:** Brief anatomy and physiology of mammary gland diseases of mammary gland.
5. **Sexually Transmitted Diseases:** Gonorrhoea(سوزاك), syphilis(أتشك), Genital tuberculosis(تدرن اعضاء تناسليه), AIDS.
6. **Infertility:** Sites causes investigation diagnosis treatment.
7. **Population Planning and Contraception**(خاندانی منصوبہ بندی و مانع حمل تدابیر): Indication contraindication methods complications.
8. **Hirsutism and Intersexuality:**Problems of marriage and sex (تغيرات بين الجنس)
9. **Common Gynecological Operations and Instruments:** Preoperative preparations role of ultra sonography in gynecology.
10. **Post Operative Complications and Its Management**
11. **Ectopic Pregnancy**
12. **Abortion**(اسقاط حمل)

### **Gynaecology-II (Clinical):**

1. Students examine out door indoor patients.
2. Take history.
3. Get complete information about diagnosis and treatment.

4. All the instruments issued in gynecological examination should be recognized and their uses known.
5. Conduction of gynecological test

### **Recommended Books:**

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

### **MED-485 Mualijat (Medicine)-IV (معالجات) (Theory) Semester-VIII, (Credit Hours 3+1)**

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 laboratory support) principles of medicine (management and dietary management) prognosis complications and preventions.

1. **Endocrine disease**(أمراض الغدد الصماء)
  - I. The thyroid gland(الغدة الدرقية)
  - II. The reproductive system(الجهاز التناسلي)
  - III. Parathyroid gland(الغدة الدرقية)
  - IV. Adrenal glands(الغدد الكظرية)
  - V. Endocrine pancreas and GIT(البنكرياس والغدد الصماء والجهاز الهضمي)
  - VI. Hypothalamus and the pituitary gland(تحت المهاد والغدة النخامية)
  - VII. Disease affecting multiple endocrine glands(الأمراض التي تؤثر على الغدد الصماء متعددة)
2. **Blood disease** (أمراض الدم)
  - VIII. Blood products and transfusion(منتجات الدم ونقل الدم)
  - IX. Bone marrow and peripheral blood stem cell transplantation(نخاع العظم والخلايا الجذعية الطرفية زرع الدم)
  - X. Anticoagulant and antithrombotic therapy(تخثر والعلاج جرعات)
  - XI. Anemia(فقر الدم)
  - XII. Haemoglobinopathies(الاعتلالات الهيموغلوبينية)
  - XIII. Haematological malignancies(الأورام الخبيثة الدموية)
  - XIV. Aplastic anaemia(فقر الدم اللاتنسجي)
  - XV. Myeloproliferative disorders. (اضطرابات التكاثر النقوي)

### **Mualijat (Medicine)-IV (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, **Hazique**, 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,(C.R.W. Edward, and I.A.D. Boucher:Eds),BPC Publisher, London(1990).

## 9<sup>th</sup> and 10<sup>th</sup> Semester, BEMS Final Professional

Course Code	Course No.	Ninth Semester	Cr. Hr.
PED	591	Pediatrics-I	2+1
OPT	592	Ophthalmology	2+1
OBS	593	Obstetrics-I	2+1
SUR	594	Surgery-III	2+1
CLD	595	Clinical Diagnostics-I	3+1
MED	596	Mualijat (Medicine)-V	3+1
		Final Year Project (F.Y.P)	6
<b>Total Course 6</b>			<b>20+6</b>

Course Code	Course No.	Tenth Semester	Cr. Hr.
PED	5101	Pediatrics-II	2+1
ENT	5102	ENT	2+1
OBS	5103	Obstetrics-II	2+1
SUR	5104	Surgery-IV	2+1
CLD	5105	Clinical Diagnostics-II	3+1
MED	5106	Mualijat (Medicine)-VI	3+1
<b>Total Marks / Total Course 6</b>			<b>14+6</b>

**Total Credit Hours : 46**

### NINTH SEMESTER

#### **PED-591 Pediatrics-I (Theory)** **Semester-IX, (Credit Hours 2+1)**

#### **Pediatrics-I طب الأطفال (Theory):**

1. History Taking and Physical Examination. (أخذ التاريخ والفحص البدني.)
2. Growth and Development. (النمو والتنمية.)
3. Immunization. (تحصين)
4. Nutrition. (تغذية)
5. Protein Energy Malnutrition. (البروتين للطاقة سوء التغذية.)
6. Neonatology: (حديثي الولادة)
  - Resuscitation of newborn (إنعاش حديثي الولادة)
  - Prematurity (بكر)
  - Low Birth weight (انخفاض الوزن عند الميلاد)
  - Jaundice in newborn (يرقان حديثي الولادة في)
  - Neonatal sepsis (الانتان الوليدي)
  - Hypoglycemia (نقص السكر في الدم)
  - Hypocalcemia (نقص كالسيوم الدم)

- Neonatal Seizures (المضبوطات حديثي الولادة)  
 Hemorrhagic disease of Newborn (الأمراض النزفية من حديثي الولادة)  
 Tetanus neonatorum (الكزاز الوليدي)  
 Respiratory distress in the newborn period (الضائقة التنفسية في فترة الولادة)  
 Hyaline membrane disease (HMD) (أمراض غشاء زجاجي)  
 Intracranial Hemorrhage (نزف داخل الجمجمة)  
 Infant of Diabetic mother (IDM) (الرضع من الأم السكري)  
 Maternal Medication and Fetal Hazards (الدواء أمومية و المخاطر الجنين)
7. **Infectious Diseases (أمراض المعدية)**  
 Diarrhea (الإسهال)  
 Poliomyelitis (شلل الأطفال)  
 Diphtheria (الخنق)  
 Pertussis (السعال الديكي)  
 Pulmonary TB (السل الرئوي)  
 Measles (الحصبة)  
 Typhoid Fever (حمى التيفوئيد)  
 Hepatitis (التهاب الكبد)  
 Hepatic Failure (الفشل الكبدي)  
 Rheumatic fever (الحمى الروماتيزمية)  
 Protozoal Infection (العدوى الأولي)  
 Pica (بيكا)  
 Fever of unknown origin (حمى مجهولة المنشأ)
8. **Respiratory System: (الجهاز التنفسي)**  
 Foreign body inhalation (استنشاق جسم غريب)  
 Bronchiolitis (التهاب القصيبات)  
 Acute Epiglottitis (التهاب لسان المزمار الحاد)  
 Pneumonia (الالتهاب الرئوي)  
 Bronchial Asthma (ربو)  
 Respiratory distress (الضائقة التنفسية)  
 Pulmonary Tuberculosis (السل الرئوي)  
 Pleural effusion (الانصباب الجنبي)  
 Cystic Fibrosis (التليف الكيسي)

### **Pediatrics-I (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. Basis of Pediatrics 9<sup>th</sup> Edition by Pervez Akbar Khan
2. Nelson Text Book of Pediatrics 18<sup>th</sup> Edition by Kliegman
3. S M Haneef, S Maqbool, Arif, **Pakistan Paediatric Medical Association**, International Book Bank, Lahore,(1997).



4. John Apley, **The Child with Abdominal Pain**, Black well Scientific Publications, London, (1978).
5. Wilford Sheldon, **Diseases of Infancy and Childhood**, J and A Churchill Ltd, London (1946).
6. David Rubin, M Caplen, **Paediatric Emergency Medicine**, Mosby Publication, USA (1994).
7. Holt Howland, **Holts Disease of Infancy and Childhood**, Appleton-Century Crofts Inc, London (1994).
8. Saul Krugman, Katz Gershon, **Infectious Diseases of Children**, Mosby Publication, USA (1992).

## OPT-592 Ophthalmology (أمراض العيون) (Theory) نظرية Semester–IX, (Credit Hours 2+1)

### Study of Diseases of the Eye دراسة أمراض العين:

**Lids** الأغشية; Anatomy, Classification of lid disease, Blepharitis التهاب الجفن , شتره داخلي Entropion , شتره خارجي Ectropion , زائيس Styelid , Chalazion البردة , Trichiasis الشعرة , Ptosis إبطاق , Tumours الأورام , Herpes Zooster خارجي , Symblepharon ملتحمي التصاق ملتحمي , Composition تشريح , Anatomy الجهاز الدمعي **Lacrimal Apparatus** . الحلا النطاقي circulation and function of tear film الدموع للمسيل , Dry eye عين جافة , Excessive watering الإفراط في الري (Epiphora دماغ ) Dacryoeystitis التهاب كيس الدمع (acute and chronic الحادة والمزمنة **Orbit** مدار; **Orbital** مداري cellulitis التهاب الخلوي , Proptosis جحوظ , Enophthalmos خوص , Tumours الأورام , Exophtalmos جحوظ العين , **Conjunctiva** ملتحمه Anatomy تشريح , Classification of conjunctival disease مرض (الحساسية Bacterial and Allergic بكتيريا , Viral فيروسية , Conjunctivitis التهاب الملتحمة , الملتهمة , Trachoma جرب الجفن , Pterygium الظفرة , Ophthalmia neonatorum الرمد الوليدي , **Cornea** قرنيه Anatomy تشريح , Classification of corneal diseases أمراض القرنية , Corneal ulcers قرحة القرنية , Keratoconus القرنية المخروطية , Corneal opacities عتامة القرنية , D/D Keratoplasty القرنية , **Sclera** الصلبة العينية; Anatomy تشريح , Episcleritis التهاب ظاهر الصلبة , Scleritis التهاب الصلبة , **Uveal Tract** السبيل العيني; Anatomy تشريح , Classification of uveal tract disease السبيل العيني , Uveitis التهاب القزحية , Panophthalmitis التهاب العين الشامل , D/D of red eye عين حمراء , **Lens** عدسة; Anatomy تشريح , Cataract الساد , **Vitreous** زجاجي; Anatomy تشريح , Blood in vitreous الدم في الجسم الزجاجي , synechiae التصاقات القزحية , **Glaucoma** الزرق; Physiology of aqueous formation تشكيل مائي and circulation, Maintenance of normal intraocular pressure ضغط العين , Glaucoma الزرق , **Retina** شبكية العين , Anatomy تشريح , Classification of retinal diseases , Retinal detachments انفصال الشبكية , Diabetic retinopathy اعتلال الشبكية , Hypertensive retinopathy ارتفاع ضغط الدم اعتلال الشبكية , Occlusion of retinal artery انسداد الشبكية , Occlusion of retinal vein انسداد الوريد الشبكي , Retino-blastoma ورم أرومي , **Optic Nerve** التهاب العصب البصري , Papilloedema وذمة الحليمة , Optic Neuritis التهاب العصب البصري , Chronic Retrobulber neuritis الحاد خلف المقلة التهاب العصب البصري , Acute Retrobulber neuritis الحاد خلف المقلة التهاب العصب البصري , Optic atrophy ضمور البصرية , **Injuries** إصابات ; Extraocular foreign bodies اجسام غريبة خارجة , Blunt injuries اجسام غريبة داخل Perforating injuries إصابات with intraocular foreign bodies اجسام غريبة داخل , injury due to burns الحروق and chemicals مواد كيميائية إصابة العين , **Squint** الحول; Definition and Classification.

**Pupil** *تقلبه عنبيه*; Anatomy *تشريح*, Pupillary pathways *مسارات الحدقة*, Significance of pupillary size *مسارات الحدقة* and reaction *رد فعل* in diseases *الأمراض*.

**Ocular manifestation** *مظهر العين* of **Vitamin A, Deficiency, and its management, Errors of refraction** *أخطاء الانكسار*; Optical system *النظام البصري* of normal eye *العين الطبيعية*, Myopia *فصرا النظر*, Hypermetropia *مد البصر*, Astigmatism *اللانقطية*, Presbyopia *طول النظر الشيخوخي*, Aphakia *انعدام العدسة*.

**Ophthalmology** *طب العيون* (Clinical) *مرضي*:

**Clinical, Practical Training and Examination of Eye:** History taking, Simple examination with torch, Visual acuity testing *اختبار حدة البصر*, Visual field testing *اختبار المجال البصري*, Regurgitation test *اختبار قلس*, Measurement *قياس* of intraocular pressure *ضغط العين* (digital, tonometry), Eversion *انقلاب للخارج* of upper eye lid *الجفن العلوي*, Dressing of corneal ulcer *قرحة القرنية* and post operative dressing, Identification of lenses *العدسات* and their uses, Identification of lenses and their uses, Theoretical principal of retinoscopy *تنظير الشبكية*, Ophthalmoscopy *تنظير العين* practical ability of direct, theoretical principal of indirect, Use of slit lamp *المصباح الشقي*.

### Recommended Books:

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

**OBS-593 Obstetrics-I (Theory) (علم ولادت / علم قبالت)**  
**Semester–IX, (Credit Hours 2+1)**

Introduction, obstetrical history taking and examination conception implantation (عمل تنصیب) 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** (جنین): Size, circulation (جنینی دوران خون), fetal diameter, fetal and obstetrical, examination, bony pelvic axis, pelvic abnormalities, fetal monitoring.
2. **Normal Pregnancy** (حمل): Clinical signs and symptoms of pregnancy (حمل کی علامات و نشانیوں), diagnosis of pregnancy (حمل کی تشخیص), duration of pregnancy, hyper emesis gravidarum physiological (حاملہ کے طبعی تغیرات) maternal changes during pregnancy, antenatal care (حاملہ کی نگہداشت) and fetal examination methods advice during pregnancy harmful drug effect of fetus parental diagnosis.
3. **Abnormal Pregnancy**: Early pregnancy loss and its management (abortion) اسقاط pregnancy with fibroids ovarian cyst and prolapsed uterus, placental abnormalities umbilical cord (غیر طبی حبل السره) abnormalities antepartum hemorrhage (جریان الدم قبل از ولادت) placental abruption types diagnosis management and treatment. Placenta praevia types diagnosis management and treatment polyhydramnios (کثرت ماء المنوی) and oligohydramnios (قلت ماء المنوی) 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 pot maturity, multiple gestation (حمل توام و حمل عدید).
4. **Newborn and Its Disorders** (امراض نومولود): Examination and care of newborn (نوزندہ کی نگہداشت), Asphyxia Neonatorum (حبس تنفس نومولود), birth injuries. Icterus Neonatorum (یرقان نومولود). 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 (نومولود کی خلقی بدوضعیاں).

**Obstetrics -I (Clinical):**

Students to examine the out door and indoor patients, history taking and to get comprehensive information about diagnosis and treatment, all the instruments issued in obstetrical examination should be recognized and their uses known, conduction of obstetrical 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).
8. Rashid Latif, **Gynecology**, CBS Publishers, New Delhi, Gynecology (1996).
9. Jeffcoate, **Gynecology**, Union book Publishers, Karachi (1980).
10. Bhattacharya, **Gynecology**, Butterworth and Co Publishers, Lahore (1981).
11. Robert Kistner, **Gynecology**, Mosby Publisher, USA (1990).

### **SUR-594 Surgery-III (Theory)** **Semester-IX, (Credit Hours 2+1)**

1. **Urogenital System:** Urinary symptoms and investigations, Anuria, Prerenal, renal and post renal anuria. بندش بول
2. **Kidney and Ureters:** Hydronephrosis, pyonephrosis, renal calculus and ureteric calculus, Renal tuberculosis, Perinephric abscess, Neoplasms of kidney. سرطان الكليہ
3. **Urinary Bladder:** Retention of urine, Etiology, signs, symptoms and treatment, Incontinence of urine, Vesical calculus, Cancer of urinary bladder. احتباس البول، سلس البول، سرطان مثانہ
4. **Prostate:** Benign prostate hypertrophy, carcinoma of prostate, acute and chronic prostatitis. عظم غدہ قدامیہ، سرطان غدہ قدامیہ
5. **Urethra and Penis:** Urethritis and urethral stricture. قروح طبری، التهاب حالب بول
6. **Testis and Scrotum:** Imperfect descent of testis, Ectopic testis, Torsion of testis, Vericocele: causes, signs and symptoms investigations and treatment, Hydrocele types, Epididymitis and orchitis. قیلہ مائیہ، ورم خصیہ

### **Surgery-III (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 and Control of pain.
2. **Emergency Room Work:** Identification of patients, History of patients, Physical examination and Laboratory examination.

3. **Minor Surgical Procedures:** Abscess drainage, Toe nail excision, Venous cut down, Circumcision and Stitching of cut down.

### **Recommended Books:**

1. Bailey and Love's, **Short Practice of Surgery**, 26<sup>th</sup> Edition, Chapman and Hall Medical, London (2013).
2. S. Das, **Handbook of Clinical Surgery**, 6<sup>th</sup> Edition, Dr. S. Das, Calcutta (2003).
3. Schwartz, S. Spencer, **Principle of Surgery**, 5<sup>th</sup> Edition, Monotype Composition Co., Yale (1989).
4. Richard M. Stillman, **General Surgery**, 3<sup>rd</sup> Edition, Prentice Hall International Inc. New Jersey (1988).
5. Altaf Hussain Rathore, **Short Text Book of Surgery**, Vol. I and II, 1<sup>st</sup> Edition, Ilmi Kitab Khana, Lahore (1982).
6. Bruce E. Jarrell and R. Anthony Carabasi, **NMS–Surgery**, 2<sup>nd</sup> 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**, 5<sup>th</sup> Edition, Lange Medical Publication, California. (1973).
10. K. Das, **Clinical Methods in Surgery**, 12<sup>th</sup> Edition, Prince Book Depot, Lahore (1984).
11. **Hamilton Bailey's, Demonstration of Physical signs in Clinical Surgery**, 15<sup>th</sup> Edition, John Wright and Sons Ltd., Birmingham (1973).
12. Anis Ismail, **Jarahat-e-Amliah Sagheera**, 1<sup>st</sup> Edition, Ajmal Khan Tibbia College, Aligarh (1995).
13. Tafseer Ali and Anees Ismail, **Ilmul Jarahat in the Light of History**, 1<sup>st</sup> 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**, 1<sup>st</sup> Edition, Islami Burqi Press, Lucknow (1940).

### **CLD-595 Clinical Diagnostics-I سریریاتی تشخیص (Theory)** **Semester–IX, (Credit Hours 3+1)**

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 system, students will take training in clinical knowledge examination skills and will be provided 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 award of their urgent responsibility to refer for thorough medical investigations. Example of such cases includes dysphagia, bleeding per rectum, severe cardiac arrhythmias.

CNS disorders

Functional anatomy, physiology and investigation

Clinical examination of the Nervous system, Investigation of neurological diseases

Differential diagnosis of presenting problem in nervous system diseases

Headache and facial pain, dizziness, blackouts and funny turns, Sleep disorders, Disorders of movement, sensory disturbances, coma and brain death, apoplexy, syncope, acute confusional state, disturbance of memory, changes in personality and behavior, speech and language disturbance, disorders of perception problem with brainstem function, Swallowing difficulties, disorders of balance, visual disturbance, sphincter disturbance, convulsion, tremors, wasting of small muscles, hemiplegia, paraplegia (Stroke).

**Psychiatric Problems:** Anxiety, Depression, Suicide

**CVS disorders**

**Clinical Examination of cardiovascular system**

**Functional Anatomy, Physiology and Investigations**

Anatomy, Physiology, Investigation of cardiovascular diseases, Therapeutic Procedures

**Major Manifestations of Cardiovascular diseases**

Chest pain, Breathlessness (dyspnoea), acute circulatory failure, Heart failure, hypertension.

Abnormal heart sound and murmurs, pre syncope and syncope, palpitation, atrial fibrillation, cardiac arrest and sudden cardiac death

## **Respiratory disorders**

Clinical examination, functional anatomy and physiology

Investigation, Presenting problem in respiratory disease

1)Cough,2)Breathlessness, 3)chest pain,4)haemoptasia,5)incidental pulmonary nodule on imaging ,6)pleural effusion,7)respiratory failure, management of acute respiratory failure, chronic and acute on chronic type 2 respiratory failure, home ventilation for chronic respiratory failure, lung transplantation

### **Clinical Diagnostics-I (Clinical):**

Study 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** (1<sup>st</sup> ed.) Hodder and stoughton.
2. Lumley, j.s.p. and bouloux, p.m.g. (1994). **Clinical examination of a patient** (1 st ed.) Butterworth-heinemann. Ltd.
3. Toghil, p. (ed) (1995). Examining patients - **an introduction to clinical medicine** (2 nd 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 (2<sup>nd</sup> ed.) Blackwell.
5. Rowley, N. (1994). **Handson (A Manual of Clinical Skills for Complementary Medical Practitioners** (1<sup>st</sup> ed.) Hodder and Stoughton.
6. Lumley, J.S.P. and Bouloux, P.M.G. (1994). **Clinical Examination of a Patient** (1 st ed.) Butterworth-Heinemann. Ltd.
7. Toghil, P. (ed) (1995). Examining patients - **An Introduction to Clinical Medicine** (2 nd ed.) Edward Arnold.
8. 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 (2<sup>nd</sup> ed.) Blackwell.

## MED-596 Mualijat (Medicine)-V (Theory) Semester-IX, (Credit Hours 3+1)

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 laboratory support) principles of medicine (management and dietary management) prognosis complications and preventions.

### Classification of CNS Disorder

#### Clinical examination of the Nervous system

الفحص السريري للجهاز العصبي  
التشريح الوظيفي والفيزيولوجيا  
والتحقيق

#### Functional anatomy, physiology and investigation

##### Anatomy and physiology

علم التشريح وعلم وظائف الأعضاء

##### Investigation of neurological diseases

التحقيق في الأمراض العصبية

#### 1. Differential diagnosis of Presenting problem in nervous system diseases

التشخيص من تقديم المشكلة في

##### 1. Headache and facial pain

أمراض الجهاز العصبي

الصداع وآلام الوجه

##### 2. Dizziness, blackouts and funny turns,

الدوخة، انقطاع التيار الكهربائي

##### 3. Sleep disorders

والمنعطفات مضحك

##### 4. Disorders of movement

اضطرابات النوم

##### 5. Sensory disturbances

اضطرابات الحركة

##### 6. Coma and brain death, Apoplexy, Syncope

الاضطرابات الحسية

##### 7. Acute confusional state

الغيبوبة والموت الدماغي، السكتات

##### 8. Disturbance of memory

الدماغية، الغشيان

##### 9. Changes in personality and behavior

حالة خلط

##### 10. Speech and language disturbance

اضطراب في الذاكرة

##### 11. Disorders of perception

التغيرات في الشخصية والسلوك

##### 12. Problem with brainstem function

الكلام واضطرابات اللغة

##### 13. Swallowing difficulties

اضطرابات الإدراك

##### 14. Disorders of balance

المشكلة مع وظيفة الدماغ

##### 15. Visual disturbance

صعوبات البلع

##### 16. Sphincter disturbance

اضطرابات التوازن

##### 17. Convulsion,

الاضطرابات البصرية

##### 18. Tremors,

اضطراب العضلة العاصرة

##### 19. Wasting of small muscles,

تشنج

##### 20. Hemiplegia, Paraplegia (Stroke)

الهزات

##### Headache Syndrome

يستتبع من العضلات الصغيرة

##### Headache

السكتة الدماغية

##### Tension type Headache

صداع متلازمة

##### Cluster Headache

صداع

##### Postcoital headache

نوع التوتر الصداع

##### Exercise induced headache

الصداع العنقودي

##### Migraine

الصداع النصفي



Trigeminal Neuralgia	مثلث التوائم الألم العصبي
3Cerebrovascular disease	الأمراض الدماغية الوعائية
Acute stroke	السكتة الدماغية الحادة
Hemiplegia	فالج
Parapalagia	
Subarachnoid hemorrhage	نزف تحت العنكبوتية
Cerebral venous disease	المرض الوريدي الدماغى
4-Inflammatory diseases	الأمراض الالتهابية
Multiple sclerosis	التصلب المتعدد
Acute disseminated encephalomyelitis	التهاب الدماغ الحاد نشرها
	مستعرض التهاب النخاع الشوكى
Acute transverse myelitis	الحادة
5Neuro Degenerative diseases	الأمراض التنكسية العصبية
Atexia	
Dementia	
Alzheimer's Disease	مرض الزهايمر
	مرض باركنسون ومتلازمات تعذر
Parkinson's disease and akinetic-rigid syndromes	الحركة جامدة
Wilson's disease	مرض ويلسون
Huntigton's disease	مرض هنتنغتون
Hereditary ataxias	الترنحات وراثية
Motor neuron disease	مرض الخلية العصبية الحركية
Spinal muscular atrophies	ضمور العضلات الشوكى
Infections of the nervous system	التهابات فى الجهاز العصبي
Meningitits	التهاب السحايا
Parenchymal viral infections	الالتهابات الفيروسية متنى
	أمراض بريون: انتقال التهاب الدماغ
Parenchymal bacterial infections	الاسفنجي
Prion diseases:transmissible spongiform encephalitis	أمراض بريون: انتقال التهاب الدماغ
	الاسفنجي
Intracranial mass lesions and raised intracranial pressure	آفات داخل القحف الشامل ورفع
	الضغط داخل الجمجمة
Intracranial neoplasm	الأورام داخل الجمجمة
Paraneoplastic neurological disease	مرض عصبي الأبعاد الورمية
Hydrocephalus	ارتفاع ضغط الدم داخل القحف
	مجهول السبب
Idiopathic intracranial hypertension	الكزاز
Tetanus	اضطرابات العمود الفقري والحبل
	الشوكى
8 Disorders of the spine and spinal cord	سرطان عنق الرحم
Cervical spondylosis	قطني عجزى الفقار
Lumbo-sacral spondylosis	ضغط على العمود الفقري الحبل
Compression of the spine cord	الأمراض الجوهرية إذا كان الحبل
	الشوكى
Intrinsic diseases if the spinal cord	أمراض الأعصاب والعضلات
9 Diseases of nerve and muscle	

Diseases of the peripheral nervous system

أمراض الجهاز العصبي المحيطي

اضطرابات في مفترق الطرق

العصبية

Disorders of the neurological junction

أمراض العضلات

Diseases of the muscle

متلازمة غيان بري

Guillain Barre syndrome

مثلث التوائم العصب الدماغي

Trigeminal Nerve Palsy

الوجه شلل العصب

Facial nerve Palsy

الاعتلال العصبي

Neuropathy

أمراض الاعصاب مفرق

10. Diseases of Neuromuscular junction

الوهن العضلي الوبيل

Myasthenia gravis

ضمور العضلات

Muscular dystrophies

المتنوعات

11. Miscellaneous

المالنجوليا السوداء

Malenchoia

هوس

Mania

## Mualijat (Medicine)-V (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 4<sup>th</sup>, 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. C.R.W. Edward, and I.A.D. Boucher:Eds, Davidsons Practice of Medicine,,BPC Publisher, London (1990).

## **PED-5101 Pediatrics-II (Theory)** **Semester–X, (Credit Hours 2+1)**

### **1. CVS (Cardiovascular System):**

- Congestive heart failure (قصور القلب الاحتقاني)
- Fetal Circulation (تداول الجنين)
- Cyanotic Heart Diseases (أمراض القلب مزرقّة)
- Tetralogy of Fallots (رباعية Fallots)
- Transposition (التحويل)
- Tricuspid Atresia (ثلاثي الشرفات رتق)
- Pulmonary Atresia (الرئوية رتق)
- Truncus Arteriosus (الجذع الشرياني)
- Total anomalous Pulmonary Venous Drainage (مجموع الشاذة الرئوي الوريدي الصرف)
- Cyanotic Heart Diseases (مزرقّة) (أمراض القلب)
- VSD, ASD, PDA,
- Pulmonary Stenosis (تضييق الرئوي)
- Aortic Stenosis (الأبهر تضييق)
- Coarctation (تضييق)

### **2. CNS:**

- Epilepsy (صرع)
- Convulsions (التشنجات)
- Meningitis (التهاب السحايا)
- Encephalitis (التهاب الدماغ)
- Coma (غيبوبة)
- Mental Retardation (التخلف العقلي)
- Cerebral Palsy (الشلل الدماغي)
- Guillain Barre Syndrome (متلازمة غيان بري)
- Febrile Fits (يناسب الحموية)

### **3. Hematology/Oncology:**

- Anemia (الأنيميا)
- Thalassemia (الثلاسيميا)
- Disorders of Platelets (اضطرابات في الصفائح الدموية)
- G6 PD deficiency (نقص G6 PD)
- Leukemias (سرطان الدم)
- Hodgkin disease and lymphoma (مرض هودجكين وسرطان الغدد الليمفاوية)

### **4. Endocrine/Genetic/Metabolic:**

- Hypo and hyperthyroidism (الغدة الدرقية)
- Diabetes mellitus (داء السكري)
- Rickets (كساح الأطفال)
- Down's syndrome (متلازمة داون)
- Glycogen storage disease (مرض تخزين الجليكوجين)
- Lipid storage disease (مرض تخزين الدهون)

## 5. Nephrology:

Acute glomerulonephritis (التهاب كبيبات الكلى الحاد)

Nephrotic syndrome (المتلازمة الكلوية)

Acute and Chronic renal failure (الفشل الكلوي المزمن) (الفشل الكلوي الحاد)

Urinary tract infection (التهاب المسالك البولية)

## 6. Common Skin Disorders in Children:

Vascular birth marks (علامات الولادة الأوعية الدموية)

Pyoderma (تقيح الجلد)

Viral infections (العدوى الفيروسية)

Parasitic infestations of skin (الإصابة الطفيلية من الجلد)

Ichthyosis (السماك)

Lesions characterized by formation of bullae (الآفات التي تتميز بتشكيل فقاعات)

Atrophic dermatitis (التهاب الجلد الضموري)

Acne (حب الشباب)

## Pediatrics-II (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, **Holts Disease of Infancy and Childhood**, Appleton-Century Crofts Inc, London (1994).
6. Saul Krugman, Katz Gershon, **Infectious Diseases of Children**, Mosby Publication, USA (1992).

نظرية (Theory) (امراض الاذن، انف- و - حلق) ENT-5102 ENT

Semester-X, (Credit Hours 2+1)

EAR (الاذن)

**Diseases of the Ear:** Applied anatomy and physiology علم الافعال , تشريح و Signs, Symptoms and investigations of ear, Congenital disorder.

**Earache** , التهاب الأذن الظاهرة , Discharge سيلان الأذن from the ear, Otitis externa , وجع الأذن , Otitis media , التهاب الأذن الوسطى , Deafness صمم , sensory حسي , neural عصبية and conductive موصل , Tinnitus طنين الأذن , Vertigo دوام , Facial palsy شلل في الوجه , Tumors of ear أورام الأذن.

## **NOSE AND PARA NASAL AIR SINUSES** (امراض انف)

**Diseases of Nose:** Applied anatomy and physiology علم الأفعال ,  
Congenital disorders الاضطرابات الخلقية , Signs, Symptoms and investigations of  
Nasal and Sinus diseases أنفي and Sinus diseases أمراض الجيوب الأنفية , Nasal septal disorders اضطرابات  
أنفية , Nasal trauma صدمة الأنفية , Epistaxis رعاف , Rhinitis التهاب الأنف , Nasal polyps الزوائد الأنفية ,  
Sinusitis التهاب الجيب , Headache صداع الراس , Boil of the nose (يعلي) جسم  
Foreign body in the nose خنثار الجيب الكهفي , Vestibulitis (التهاب الأنف اليرقي) and Rhinolith Peenash حصاة أنفية , غريب في الأنف

## **MOUTH AND SALIVARY GLANDS** (الفم والغدد اللعابية)

**Diseases of Mouth:** Applied anatomy and physiology علم الأفعال ,  
Congenital disorders الاضطرابات الخلقية , Dental caries and periodontal diseases  
Candidiasis فطريات في , Ulcers قرحة المعدة , Stomatitis التهاب الفم , تسوس الأسنان وأمراض اللثة  
Oral manifestation of systemic disease أمراض جهازية , Premalignant  
conditions of oral mucosa ظروف ما قبل سرطان من الغشاء المخاطي للفم , Leukoplakia الطلاوة ,  
Erythroplakia رؤية حمراء , Cancer of oral cavity سرطان تجويف الفم , Infection of salivary  
glands إصابة الغدد اللعابية , Stone in the salivary glands الحجر في الغدد اللعابية , Tumor of  
salivary glands ورم الغدد اللعابية , Ranula ضفيدة .

## **THROAT** (حلق)

**Diseases of Throat:** Applied anatomy and physiology علم الأفعال ,  
Congenital abnormalities التشوهات الخلقية , Signs, Symptoms and investigations of  
throat diseases , Pharyngitis التهاب بلعوم , Tonsillitis التهاب اللوزتين , Quinsy اللوز الصديدي  
Adenoiditis التهاب الغدانيات , Dysphagia عسر البلع , Dysphonia , Tumors of esophagus  
العقيدات الصوتية , Vocal nodule التهاب الحنجرة , Laryngitis بلعوم and pharynx أورام المريء  
Recurrent laryngeal nerve palsy شلل العصب الحنجري , Vocal cord paralysis  
Laryngo tracheo bronchitis , Epiglottis لسان المزمار , شلل الحبال الصوتية  
Foreign body in the larynx جسم غريب في الحنجرة , Thyroid disease مرض الغدة الدرقية ,  
Indication of tracheostomy الشخير , Snoring , Lump in the neck تورم في الرقبة , Mediastinal tumors  
compressing larynx أورام الرئتين ضغط الحنجرة , Retropharyngeal abscess الخناق , Diphtheria البلعوم خراج خلف

## **ENT (Clinical) (امراض الاذن، انف. و - حلق) (مرضيه):**

**Clinical, Practical Training and Examination of ENT:** History taking,  
Examination of external ear الأذن الخارجية , sinuses الجيوب الأنفية , throat حلق ,  
and general examination , Use of otoscope مجال الأذن and ear speculums بالمنظار الأذن ,  
Use of tuning fork (webbers test, rhinnes test and ABC test), Use of nasal  
speculum منظار الأنف , Use of tongue depressor خافض اللسان , Examination of naso  
pharynx البلعوم الأنفي , Transillumination test for paranasal air sinuses, Indirect  
laryngoscopy التنظير الحنجرة , Introduction to instruments used in ENT examination  
and operation فحص الأنف والحنجرة وعملية .

## **Recommended Books:**

1. Diseases of Ear, Nose and Throat, PL Dingra, 5<sup>th</sup> Edition.
2. Textbook of Ear, Nose and Throat Diseases M. Maqbol, 10<sup>th</sup> Edition.

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

**OBS-5103 Obstetrics-II (Theory) (علم ولادت / علم قبالت)**  
**Semester–X, (Credit Hours 2+1)**

1. **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 1<sup>st</sup> 2<sup>nd</sup> and 3<sup>rd</sup> stage of labour mechanism of labour analgesia during labour, oxytocic drugs.
2. **Abnormal Labour:** Prolong labour and its assessment; types of prolong labour and management of fetal malpresentation (غير طبعی تقدیمات), 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 (جریان الدم بعد از ولادت) types causes clinical finding management and treatment post partum pituitary necrosis
3. **Normal Puerperium (طبعی نفاس):** Duration, management of puerperium, lochia, postnatal checkup, baby examination, immediate care to baby, normal progress of new born, infant feeding, merits and demerits of breast feeding.
4. **Abnormal Puerperium (غير طبعی نفاس):** Puerperal pyrexia genital tract infection urinary tract infection breast disorders in details homeostatic disorders.

5. **Obstetrical Procedures and Operations** (قبالتی عملیات و جراحیات): Introduction of labour types process and indication episiotomy(قطع العجان) forceps and vacuum extractor operation caesarean section(شگافِ قیصری) (operatio delivery) indication procedure and management role of ultra sound in obstetrics vital statistics.

### **Obstetrics-II (Clinical)**

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

### **SUR-5104 Surgery-IV (Theory)** **Semester–X, (Credit Hours 2+1)**

1. **Breast:** Retraction of nipples and abnormal discharge from nipples, Acute and sub-acute inflammations of the breast ورم ثدی, indications for operative management, Tumors of the breast سرطانِ ثدی and its surgical management.
2. **Lungs:** Cold abscess, Empyema:acute,subacute and chornic, Pneumothoraxریح الصدر, hemothoraxصدر دموی, pleural effusionاستسقاء الریه, Foreign body in trachea and bronchus, Tumor of bronchi and lung سرطانِ ریوی, Lung abscess, Post operative pulmonary complications, Tracheostomy: indications and method of tracheostomy.
3. **Thyroid Gland:** Hypothyroidism, Goiter: its classification, simple goiter and toxic goiter, Neoplasms of the thyroid gland. سرطانِ غده درقیہ.
4. **Veins:** Deep vein thrombosis:انجمادالدم وریدی غائر: Prevention, detection and treatment, Varicose vein دوائِ نما وریدین Examination, Signs, Symptoms, treatment and complications.
5. **Artery:** Arterial ischemia and occlusion, gangreneغانغرانہ, amputation and arterial aneurysm. أمّ الدم/اینورسما.
6. **Heart:** Congenital diseases of heart.
7. **Head:** Head injury ضربتہ الراس and its management.

8. **Burn:** احراق / حرقتہ 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.
9. **Anesthesia** دوائے بیہوشی: Local, regional and general anesthesia.
10. **General Principles of Orthopedics:** 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, Complications of fracture, Immediate, early and late complications, Special types of fracture کسر , Stress fracture and pathological fractures, Infections of bones and joints, Acute and chronic osteomyelitis, Acute suppurative arthritis وجع المفاصل , Tuberculosis arthritis and osteomyelitis.

### **Surgery-IV (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 and Control of pain,
2. **Emergency Room Work:** Identification of patients, History of patients, Physical examination and Laboratory examination.
3. **Minor Surgical Procedures:** Abscess drainage, Toe nail excision, Venous cut down, Circumcision and Stitching of cut down

### **Recommended Books:**

1. Bailey and Love's, **Short Practice of Surgery**, 26<sup>th</sup> Edition, Chapman and Hall Medical, London (2013).
2. S. Das, **Handbook of Clinical Surgery**, 6<sup>th</sup> Edition, Dr. S. Das, Calcutta (2003).
3. Schwartz, S. Spencer, **Principle of Surgery**, 5<sup>th</sup> Edition, Monotype Composition Co., Yale (1989).
4. Richard M. Stillman, **General Surgery**, 3<sup>rd</sup> Edition, Prentice Hall International Inc. New Jersey (1988).
5. Altaf Hussain Rathore, **Short Text Book of Surgery**, Vol. I and II, 1<sup>st</sup> Edition, Ilmi Kitab Khana, Lahore (1982).
6. Bruce E. Jarrell and R. Anthony Carabasi, **NMS–Surgery**, 2<sup>nd</sup> 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**, 5<sup>th</sup> Edition, Lange Medical Publication, California. (1973).
10. K. Das, **Clinical Methods in Surgery**, 12<sup>th</sup> Edition, Prince Book Depot, Lahore (1984).
11. **Hamilton Bailey's, Demonstration of Physical signs in Clinical Surgery**, 15<sup>th</sup> Edition, John Wright and Sons Ltd., Birmingham (1973).



12. Anis Ismail, **Jarahat-e-Amliah Sagheera**, 1<sup>st</sup> Edition, Ajmal Khan Tibbia College, Aligarh (1995).
13. Tafseer Ali and Anees Ismail, **Ilmul Jarahat in the Light of History**, 1<sup>st</sup> 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**, 1<sup>st</sup> Edition, Islami Burqi Press, Lucknow (1940).

### **CLD-5105 Clinical Diagnostics-II سریریاتی تشخیص (Theory)** **Semester–X, (Credit Hours 3+1)**

1. **Emergency Medicine and Conditions Requiring Immediate Referral:** 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.
2. **Abdominal Problems:** Review of examination of the abdomen, Differential diagnosis of abdominal pain, nausea, and vomiting, constipation, diarrhea, GIT bleeding, indigestion.
3. **Urogenital Problems:** Review of urogenital system and urinalysis, Differential diagnosis of dysuria and frequency, haematuria, polyuria, incontinence
4. **Skin Problems:** Review of the examination of skin, Skin manifestation in systemic disease, Drug skin eruptions.
5. **Miscellaneous Problems:** Weight loss and obesity, Pyrexia and hypothermia, Ear, nose and throat problems; hoarseness, sore throat, deafness.

### **Clinical Diagnostics-II (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** (1<sup>st</sup> ed.) Hodder and Stoughton.
2. Lumley, J.S.P. and Bouloux, P.M.G. (1994). **Clinical Examination of a Patient** (1 st ed.) Butterworth-Heinemann. Ltd.

3. Toghill, P. (ed) (1995). Examining patients - **An Introduction to Clinical Medicine** (2<sup>nd</sup> 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 (2<sup>nd</sup> ed.) Blackwell.
5. Rowley, N. (1994). **Handson (A Manual of Clinical Skills for Complementary Medical Practitioners** (1<sup>st</sup> ed.) Hodder and Stoughton.
6. Lumley, J.S.P. and Bouloux, P.M.G. (1994). **Clinical Examination of a Patient** (1<sup>st</sup> ed.) Butterworth-Heinemann. Ltd.
7. Toghill, P. (ed) (1995). Examining patients - **An Introduction to Clinical Medicine** (2<sup>nd</sup> ed.) Edward Arnold.
8. 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 (2<sup>nd</sup> ed.) Blackwell.

### **MED-5106 Mualijat (Medicine)-VI (Theory)** **Semester-X, (Credit Hours 3+1)**

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 laboratory support) principles of medicine (management and dietary management) prognosis complications and preventions.

### **CARDIO-VASCULAR DISEASE**

CLINICAL INVESTIGATION  
FUNCTIONAL,PHYSIOLOGY AND ANATOMY  
INVESTIGATION  
THERAPEUTIC PROCEDURE

التحقيقات السريرية  
وظيفية، وظائف الأعضاء والتشريح  
التحقيق  
الإجراء العلاجي

PRESENTING PROBLEMS IN CARDIO-VASCULAR  
DISEASE

تثيره من مشاكل في القلب والأوعية  
الدموية الأمراض

- 1) CHEST PAIN
- 2) BREATHLESSNESS (DYSPONEA)  
ACUTE LEFT HEART FAILURE  
CHRONIC HEART FAILURE  
ARTHYMIA  
ANGINAL EQUIVALENT
- 3) ACUTE CIRCULATORY FAILURE  
(CARDIOGENIC SHOCK)  
ACUTE MASSIVE PULMONARY EMBOLISM  
CARDIAE TANPONADE  
VALVULAR DISEASE

ألم في الصدر  
ألم في الصدر  
الحادة فشل القلب

ما يعادل ذبجي

فشل في الدورة الدموية الحاد  
الانسداد الرئوي الحاد شعبي

أمراض صمامات

	MANAGEMENT OF SHOCK	إدارة ال صدمة
4)	HEART FAILURE	فشل القلب
	MANAGEMENT OF ACUTE PULMONARY OEDEMA	البحث الادارة الرئوية الحادة ذمة
	MANAGEMENT OF CHRONIC HEART FAILURE	البحث الادارة المزمنة فشل القلب
5)	HYPERTENSION	ارتفاع ضغط الدم
	APPROACH TO NEWLY DIAGNOSED HYPERTENSION	نهج لتشخيصها حديثا ارتفاع ضغط الدم
6)	SYNSCOPE AND PRESYNCOPE	
	DIFFERENTIAL DIAGNOSIS	التشخيص التفريقي
7)	PALPITATION	خفقان
8)	CARDIAC ARREST AND SUDDEN CARDIAC DEATH	توقف القلب والموت المفاجئ القلب
9)	ABNORMAL HEART SOUND AND MURMURS	صوت القلب غير طبيعي والندندنة
	DISORDER OF HEART RATE,RHYTHM AND CONDUCTION	اضطراب في دقات القلب، وإيقاع والتوصيل الإيقاع
1)	SINUS RHYTHM	
	SINUS ARRHYTHMIA	
	SINUS BRADYCARDIA	بطء القلب الجيبي
	SINUS TACHYCARDIA	
2)	SINUS TACHYARRHYTHMIA	
	ATRIAL ECTOPIC BEATS (EXTRA SYSTOLES,PREMATURE BEATS)	
	ATRIAL TACHYCARDIA	
	ATRIAL FLUTTER	الرجفان الأذيني
	ATRIAL FIBRILLATION	الرجفان الأذيني
3)	SUPRA HYPER VENTILATION TACHYCARDIA	التهوية عدم انتظام دقات القلب
	ATRIOVENTRICULAR NODAL RE-ENTRANT TACHYCARDIA (AVRNT)	الأذينية البطينية ولف باركنسون ومتلازمة الأذينية البطينية
	WOLFF-PARKINSON-WHITE SYNDROME AND ATRIOVENTRICULAR RE-ENTRANT TACHYCARDIA WHITE AND RE-ENTRANT TACHYCARDIA	
4)	VENTRICULAR TACHYCARDIA	تسرع القلب البطيني
	VENTRICULAR ECTOPIC BEATS (EXTRA SYSTOLES, PREMATURE BEATS)	نبض البطين خارج الرحم
	VENTRICULAR TACHYCARDIA	تسرع القلب البطيني
5)	ATRIOVENTRICULAR AND BUNDLE BRANCH BLOCK	الأذينية البطينية وربطة فرع كتلة
	BUNDLE BRANCH BLOCK AND HEMIBLOCK	حزمت فرع منع وصول و إحصار شقي
6)	ANTI-ARRHYTHMIC DRUG THERAPY	ارتفاع معدل ضربات القلب المخدرات العلاج
	THE CLASSIFICATION OF ANTI-ARRHYTHMIC DRUG	تصنيف المخدرات ارتفاع معدل ضربات القلب

7)	THERAPEUTIC PROCEDURE EXTERNAL DEFIBRILLATION AND CARDIOVERSION CATHETER ABLATION TEMPORARY PACEMAKER IMPLANTABLE CARDIAC DELIBRATION (ICD) CARDIAC RESYNCHRONISATION THERAPY (CRT)	الإجراء العلاجي إزالة الرجفان الخارجي وتقويم نظم القلب اجتثاث القنطرة جهاز تنظيم ضربات القلب المؤقتة المداولات التي تزرع في الجسم العلاج القلب إعادة تزامن
	ATHEROSCLEROSIS	تصلب الشرايين
	CORONARY HEART DISEASE	أمراض القلب التاجية
1)	STABLE ANGINA ANGINA WITH NORMAL CORONARY ARTEREIS	الذبحة المستقرة الذبحة الصدرية مع الشرايين التاجية عادي
2)	ACUTE CORONARY SYNDROME IMMEDIATE MANAGEMENT (1 <sup>ST</sup> 12 HRS) COMPLICATION OF ACUTE CORONARY SYNDROME LATER IN HOSPITAL MANAGEMENT	متلازمة الشريان التاجي الحادة إدارة الفوري مضاعفات متلازمة الشريان التاجي الحادة في وقت لاحق إدارة المستشفيات
3)	CARDIAE RISK OF NON CARDIAC SURGERY	الخطر على القلب من غير جراحة القلب
	VASCULAR DISEASE	أمراض الأوعية الدموية
1)	PERIPHERAL ATRIAL DISEASE CHRONIC LOWER LIMB ARTERIAL DISEASE CHRONIC UPPER LIMB ARTERIAL DISEASE RAYNAUD'S PHENOMENA AND RAYNAUD'S DISEASE ACUTE LIMB ISCHEMIA CEREBROVASCULAR DISEASE , RENOVASCULAR DISEASE AND ISCHEMIC GUT INJURY	مرض الشرايين الطرفية الطرف السفلي المزمنة مرض الشرياني الطرف العلوي المزمنة مرض الشرياني ارينود الظواهر ومرض رينود نقص التروية الحادة الدماغية مرض، الكلوية المرض والإصابة الدماغية القز مرض الشريان الأبهر الأبهر تسلخ الأبهر
2)	DISEASE OF AORTA AORTIC ANEURYSM AORTIC DISSECTION	أمراض القلب الروماتيزمية الحمى الروماتيزمية الحادة الروماتيزمية المزمنة أمراض القلب مرض الصمام التاجي تاجي تضيق قلس التاجي
3)	RHEUMATIC HEART DISEASE ACUTE RHEUMATIC FEVER CHRONIC RHEUMATIC HEART DISEASE	مرض الصمام الأبهر تضيق الأبهر قلس الأبهر
4)	MITRAL VALVE DISEASE MITRAL STENOSIS MITRAL REGURGITATION	ثلاثي الشرفات صمام تضيق الثلاثي الشرف
5)	AORTIC VALVE DISEASE AORTIC STENOSIS AORTIC REGURGITATION	
6)	TRICUSPID VALVE TRICUSPID STENOSIS	

7)	TRICUSPID REGURGITATION	قلس الثلاثي الشرف
	PULMONARY VALVE DISEASE	صمام الرئوية المرض
	PULMONARY STENOSIS	تضييق رئوي أو تضيق
	PULMONARY REGURGITATION	قلس الرئوية
8)	INFECTION	الالتهابات
9)	VALVE REPLACEMENT SURGERY	استبدال صمام جراحة

	CONGENITAL HEART DISEASE	أمراض القلب الخلقية
	PERSISTENT DUCTUS ARTERIOSUS	الثابتة القناة الشريانية
	COARCTATION	تضييق
	ATRIAL SEPTAL DEFECT	عيوب الحاجز الأذيني
	VENTRICULAR SEPTAL DEFECT	الصراف الصحي البطين فشل
	TETRALOGY OF FALLOT	رباعية فالو
	OTHER CAUSES OF CYANOSTIC	الأسباب الأخرى للمزرقة أمراض القلب
	CONGENITAL HEART DISEASE	الخلقية
	ADULT CONGENITAL HEART DISEASE	البالغ أمراض القلب الخلقية

	DISEASE OF THE MYOCARDIUM	مرض عضلة القلب
1)	MYOCARDITIS	إلتهاب العضلة القلبية
2)	CARDIOMYOPATHY	اعتلال عضلة القلب
	DILATED CARDIOMYOPATHY	تمدد عضلة القلب
	HYPERTROPIC CARDIOMYOPATHY	اعتلال عضلة القلب الضخامي
	ARRHYTHMOGENIC RIGHT VENTRICULAR	محدث اضطراب النظم البطين الأيمن
	CARDIO MYOPATHY	اعتلال عضلة القلب
	OBLITERATIVE CARDIOMYOPATHY	اعتلال عضلة القلب مسد
	RESTRICTIVE CARDIOMYOPATHY	اعتلال عضلة القلب التقييدية
3)	SPECIFIC DISEASE OF HEART MUSCLE	مرض معين من عضلة القلب
4)	CARDIAC TUMOR	ورم القلبية

	DISEASE OF PERICARDIUM	مرض التأمور
	ACUTE PERICARDITIS	التهاب التأمور الحاد
	PERICARDIAL EFFUSION	انصباب التأمور
	TUBERCULOUS PERICARDITIS	السل التهاب التأمور
	CHRONIC CONSTRICTIVE PERICARDITIS	التهاب التأمور التضيقية المزمنة

	RESPIRATORY DISEASE	أمراض الجهاز التنفسي
	CLINICAL EXAMINATION	الفحص السريري
	FUNCTIONAL ANATOMY AND PHYSIOLOGY	التشريح الوظيفي والفيزيولوجيا
	INVESTIGATION	التحقيق

	PRESENTING PROBLEM IN RESPIRATORY	عرض مشكلة في أمراض الجهاز
	DISEASE	التنفسي
1)	COUGH	كحة
2)	BREATHLESSNESS	ضيق التنفس
	CHRONIC EXTERNAL BREATHLESSNESS	التنفس الخارجي المزمنة
	ACUTE SEVER BREATHLESSNESS	ضيق التنفس الحاد سيرفيه
3)	CHEST PAIN	ألم في الصدر
4)	HOMEOPLASIA	تنسج مثلي

- 5) INCIDENTAL PULMONARY NODULE ON IMAGING
- 6) PLEURAL EFFUSION
- 7) RESPIRATORY FAILURE  
MANAGEMENT OF ACUTE RESPIRATORY FAILURE  
CHRONIC AND ACUTE ON CHRONIC TYPE 2  
RESPIRATORY FAILURE  
HOME VENTILATION FOR CHRONIC  
RESPIRATORY FAILURE  
LUNG TRANSPLANTATION  
TROPICAL PULMONARY ESONIPHILLA  
WEGENER'S GRANULOMATOSIS  
GOODPASTURES' SYNDROME
- 8) LUNG DISEASE DUE TO IRRADIATION AND  
DRUGS  
RADIOTHERAPY  
DRUGS
- 9) RARE INTERSTINAL LUNG DISEASE

العقيدات الرئوية عرضية على التصوير  
الانصباب الجنبي  
توقف التنفس

فشل الجهاز التنفسي الحادة إدارة  
المزمنة والحادة على نوع المزمنة 2  
التنفسي الفشل  
التهوية المنزلية من أجل الفشل التنفسي  
المزمنة  
زراعة الرئة  
فرط الحمضات الرئوية الاستوائية  
حبيبي فيجنر  
متلازمة غود باستشار

أمراض الرئة بسبب الإشعاع والأدوية  
المعالجة بالإشعاع  
أدوية  
نادر أمراض الرئة الخلالي

#### OBSTRUCTIVE PULMOANARY DISEASE

- 1) ASTHAMA  
OCCUPATIONAL ASTHAMA  
Berylliosis
- 2) CHRONIC OBSTRUCTIVE PULMONARY  
DISEASE (COPD)
- 3) BRONCHIECTASIS
- 4) CYSTIC FEBRIOSIS

مرض الانسداد الرئوي  
الربو  
الربو المهني  
التسمم بالبريليوم

مرض الانسداد الرئوي المزمن  
توسع القصبات  
التليف الكيسي

#### INFECTION OF RESPIRATORY SYSTEM

- 1) UPPER RESPIRATORY TRACT INFECTION
- 2) PNEUMONIA  
COMMUNITY-ACQUIRED PNEUMONIA (CAP)  
HOSPITAL-ACQUIRED PNEUMONIA (HAP)  
SUPPURATIVE PNEUMOINA AND  
PULMONARY ABSCESS  
PNEUMONIA IN IMMUNOCOMPROMISED  
PATIENT
- 3) TUBERCULOSIS  
OPPERTUNISTIC MYOCOBACTERIAL  
INFECTION
- 4) RESPIRATORY DISEASE CAUSED BY FUNGI  
OTHER FUNGAL INFECTION
- 5) PRIMARY TUMOUR OF LUNG
- 6) SECONDARY TUMOUR OF LUNG  
LYMPHATIC SPREAD OF CARCINOMA IN

إصابة الجهاز التنفسي  
الجهاز التنفسي العلوي الالتهابات  
الالتهاب الرئوي  
المجتمع المكتسبة الالتهاب الرئوي  
مستشفى المكتسبة الالتهاب الرئوي  
القيحي الالتهاب الرئوي والرئة خراج  
الالتهاب الرئوي في المرضى المناعة  
السل

الالتهابات الفطرية الانتهازية  
أمراض الجهاز التنفسي التي تسببها  
الفطريات  
عدوى فطرية أخرى  
الأورام الأولية للرئة  
ورم الرئة الثانوية  
الانتشار للمفاوية سرطان في الرئة

LUNG  
7) TUMOUR OF MEDIASTINUM

أورام المنصف

INTERSTITIAL AND INFILTRATE PULMONARY DISEASE

- 1) DIFFUSE PARENCHYMAL LUNG DISEASE  
IDIOPATHIC INTERSTITIAL PNEUMONIA  
IDIOPATHIC PULMONARY FIBROSIS  
NONSPECIFIC INTERSTITIAL PNEUMONIA  
SARCOIDOSIS
  - 2) LUNG DISEASE DUE TO ORGANIC DUSTS  
HYPERSENSITIVITY PNEUMONIA (HP)  
INHALATION (HUMIDIFER) FEVER
  - 3) LUNG DISEASE DUE TO INORGANIC DUSTS  
SILICOSIS  
ASBESTOSIS  
BERYLLIOSIS
  - 4) LUNG DISEASE DUE TO SYSTEMIC  
INFLAMMATORY DISEASE  
ACUTE RESPIRATORY DISTRESS SYNDROME  
RESPIRATORY INVOLVEMENT IN  
CONNECTIVE TISSUE DISORDER
  - 5) PULMONARY EOSINOPHILIA AND VASCULITIS  
ACUTE EOSINOPHILIC PNEUMONIA  
CHRONIC EOSINOPHILIC PNEUMONIA
  - 6) LUNG DISEASE DUE TO RADIATION AND  
DRUGS  
RARE INTERSTITIAL LUNG DISEASE  
PULMONARY VASCULAR DISEASE
- 1) VENOUS THROMBOEMBOLISM (VTE)
  - 2) PULMONARY HYPERTENSION

الخلالي وتسلسل مرض الرئة  
المنتشر متني أمراض الرئة  
مجهول السبب المعوية الالتهاب الرئوي  
التليف الرئوي مجهول السبب  
الالتهاب الرئوي الخلالي غير محدد  
الساكرويد  
أمراض الرئة بسبب الأعبرة العضوية  
فرط الحساسية الالتهاب الرئوي  
الاستنشاق (مرطب) حمى  
أمراض الرئة بسبب الأعبرة غير  
عضوية  
السحار  
تليف  
التسمم بالبريليوم  
أمراض الرئة بسبب مرض التهاب  
النظامية  
الحادة متلازمة الضائقة التنفسية  
بإشراك التنفسي في اضطراب النسيج  
الضام  
فرط الحمضات أمراض الرئة والتهاب  
الأوعية الدموية  
الالتهاب الرئوي الحاد  
الالتهاب الرئوي المزمن  
أمراض الرئة بسبب الإشعاع والأدوية  
نادر أمراض الرئة الخلالي  
الرئوية الوعائية المرض  
الجلطات الدموية الوريدية  
ارتفاع ضغط الدم الرئوي

DISEASE OF UPPER AIRWAY

- 1) DISEASE OF NASOPHARYNX  
ALLERGIC RHINITIS  
SLEEP-DISORDERED BREATHING  
THE SLEEP APNEA / HYPOPNEA SYNDROME  
LARYNGEAL DISORDERS  
CHRONIC LARYNGITIS  
LARYNGEAL PARALYSIS  
PSYCHOGENIC HOARSENESS AND APHONIA  
LARYNGEAL OBSTRUCTION
- 3) TRACHEAL DISORDER  
ACUTE TRACHEITIS

مرض مجرى الهواء العلوي  
مرض البلعوم الأنفي  
حساسية الأنف  
المختلين التنفس أثناء النوم-  
متلازمة توقف التنفس أثناء النوم /  
ضعف التنفس  
اضطرابات الحنجرة  
التهاب الحنجرة المزمنة  
الحنجرة الشلل  
نفسية بحة في الصوت وفقد الصوت  
انسداد الحنجرة  
القصبية الهوائية اضطراب  
القصبات الحاد

TRACHEAL OBSTRUCTION  
TRACHEO-OESOPHEGEAL FISTULA  
DISEASE OF PLEURA, DIAPHRAGM AND CHEST  
WALL

- 1) DISEASE OF PLEURA  
PLEURISY  
SPONTENOUS PNEUMOTHORAX
- 2) DISEASE OF DIAPHRAGM  
CONGENITAL DSIORDER  
ACQUIRED DISORDER
- 3) DEFORMITIES OF CHEST WALL  
THORACIC KYOPHOSCOLIOSIS

القضية الهوائية انسداد  
ناسور رغامي مريئي  
مرض غشاء الجنب، والحجاب الحاجز  
والصدر الجدار  
مرض غشاء الجنب  
ذات الجنب  
استرواح الصدر التلقائي  
مرض الحجاب الحاجز  
اضطراب الخلقية  
اضطراب بتملك  
تشوهات جدار الصدر  
الصدر جنف حدابي

### Mualijat (Medicine)-VI (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 4<sup>th</sup>, 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. C.R.W. Edward, and I.A.D. Boucher:Eds, Davidsons Practice of Medicine,,BPC Publisher, London (1990).



# ADMISSION AND EXAMINATIONS UNDER GRADUATE STUDIES

## BACHLOR OF EASTERN MEDICINE AND SURGERY

The BEMS degree requires five years of full-time study. There are two semesters per year and no mid-year entry.

### I. **BEMS Admissions**

Admissions in Hamdard University are given according to merit.

#### **Conditions for Eligibility**

Intermediate Science (Pre-Medical) / "A" Level (Biology) / B.Sc. (Biological Sciences)

## II. EXAMINATIONS SYSTEM OF EXAMINATION AND GRADING

### 1. Mid Term and Terminal Examination

The examination held at the end of semester after the completion of a course shall be known as Terminal Examination. It will carry 100 marks each for theory and practical. This examination is a passing head i.e., a student must for each course obtain a minimum of 50% marks separately in theory and practical in this examination. In each semester students may be required to appear in quizzes, and submit assignments to be determined by the teacher concerned and for these HEC policy guidelines and implementation of semester system will be followed. The examination will

- i. Theory: Mid Term Test 30 Marks, Terminal Examination 70 Marks.
- ii. Practical: Terminal Examination 100 Marks.

### 2. Grading System

Grades given to a student in each course shall be of two types:

#### a. *Numerical Grade (NG)*

Assessment of performance on the basis of marks out of 100 fixed for a course of 3 or 4 credit hours unit is NG.

#### b. *Letter Grade (LG)*

Equivalent of numerical grades in terms of alphabets shall be termed as alphabetical grades. (Each letter carries a value in terms of numerical points)

#### c. *Grading*

## Grading System

<u>Numerical Grade</u>	<u>Letter Grade</u>	<u>Grade Point</u>
90 & above	A+	4.00
85-89	A	4.00
80-84	A-	3.80
75-79	B+	3.40
71-74	B	3.00
68-70	B-	2.80
64-67	C+	2.40
61-63	C	2.00
57-60	C-	1.80
53-56	D+	1.40
50-53	D	1.00
Below 50	Fails	0.00

### Degree Requirements:

1. Letter Grades A, B, C or D in all courses.
2. Cumulative Grade Point Average (CGPA)\* - Minimum 2.00, calculated for all semesters.

$$\text{*CGPA} = \frac{\text{Sum of (credit hours X GPA)}}{\text{Total credit hours}}$$

- d. *Incomplete Grade (IG)*  
A student fails to complete a course for reason beyond his control may be granted incomplete (IG). This course can be completed subsequently, for which fresh course fee be deposited.  
Any student who fails to maintain a GPA 1.8 shall be placed on probation.
- e. *Grade Point Average (G.P.A)*  
Points obtained in each course shall be multiplied by the number of Credit Hours specified for that course, and then a grade point ratio (GPA) shall be calculated. For example, the result of a 1<sup>st</sup> year student in a semester may be as follows:
- f. *Cumulative Grade Point Average (CGPA)*  
This is obtained by adding all the Grade Points of the courses during 5 years study period and dividing the total by the total number of credit hours.
- g. *Improvement of 'C' Grade*  
A student is allowed to improve 'C' grade only when he/she has cleared all courses but short of required CGPA .(Cumulative Grade Point Average) i.e. 2.00
- h. Semester and Examination Duration

The semester duration will be four months and one month for examination both for theory and practical or clinical. Similarly the year will consist of two semesters and two terminal examinations, completing in a span of 10 months.

**3. Requirement for the Award of BEMS Degree**

- a. A student must have passed all prescribed courses.
- b. A student must have obtained a minimum CGPA : 2.00.

**4. Rules Concerning the Promotion and Repetition of Course**

A student would be promoted to next higher class upon clearing 70% of courses.

**5. Attendance**

Attendance in each subject is compulsory for all students and no student shall be eligible to appear at any University examination unless he has attended 75 per cent attendance in the course.

- i. The attendance of students admitted in the Faculty will be counted from the 1<sup>st</sup> day of semester and not from the date of admission
- ii. If a student is unable to attend classes continuously for 15 days or more without informing the Dean/Chairperson of the Department (in writing) his/her admission will also stand cancelled. In case of illness or other similar situation, application along with a medical certificate from a registered medical practitioner duly verified by the Senior Medical Officer of the University must be submitted within two days after the incident. This may be informed to the Vice Chancellor accordingly.
- iii. Original attendance register is to be submitted to the Dean/Chairperson for record and future reference.
- iv. However a student unable to complete his/her degree requirement within the validity of his/her enrollment, will have to re-validate/extend his/her enrollment for not more than 2 years by paying a prescribed fee with the permission of Dean.

**6. Unfair means**

All the cases of unfair means will be forwarded to the Unfair-means Committee appointed for the purpose and the matter will be dealt with in accordance with the rules and regulations of the University.

**7. Interpretation of Semester Rules**

The decision of the Faculty Committee, headed by the Dean, The Controller of Examination and all the Heads of Department of Faculty of Eastern Medicine would be final for the interpretation of semester rules. In case of any appeal the said Committee would dispose it off on its merits.

**CURRICULUM FOR M.PHIL.  
COURSE WORK and Credit Hours  
SCHEME OF STUDIES**

**Topic**

**Page No.**

M.Phil. Program 1 year course work and 3-5 years thesis work

**Topic:-**

- MPHIL. Credit Hours 123-130
- MPHIL. Course Contents 131-213
- MPHIL. Examination Rules 214-218

**SCHEME OF STUDIES**

**Medicine (MUALIJAT)**

**M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
MED1	111	*Principles of Medicine	100	3
MED3	112	*Therapeutics-I	50+50	2+1
MED5	113	*Therapeutics-II	50+50	2+1
MED7	114	Rational Phytotherapy-I	50+50	2+1
MED9	115	Internal Medicine-I	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
MED2	121	*Biostatistics	100	3
MED4	122	*Therapeutics-III	50+50	2+1
MED6	123	*Therapeutics-IV	50+50	2+1
MED8	124	Rational Phytotherapy-II	50+50	2+1
MED10	125	Internal Medicine-II	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**Principle of Medicine (KULLIYAT-FIL-TIBB)  
MPhil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
PEM1	111	*Principles of Medicine	100	3
PEM3	112	Humours in Health & Diseases-I	50+50	2+1
PEM5	113	Auxiliary Management of Diseases-I	50+50	2+1
PEM7	114	*Biostatistics	100	3
PEM9	115	*Research Methodology	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
PEM2	121	Fundamental of Temperament	50+50	2+1
PEM4	122	Humours in Health & Diseases-II	50+50	2+1
PEM6	123	Auxiliary Management of Diseases-II	50+50	2+1
PEM8	124	*Scientific Writing	100	3
PEM10	125	*Epidemiology	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**Obstetrics and Gynaecology (ILMUL VILADAT-VA-AMRAZ-E-NISWAN)**

**MPhil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
GOS1	111	*Principles of Medicine	100	3
GOS3	112	Female Health Care-I	100	3
GOS5	113	Infectious Gynecological Diseases-I	100	3
GOS7	114	Maternal and Child Health	100	3
GOS9	115	*Epidemiology	100	3
<b>Total Marks / Total Course 5</b>			500	15

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
GOS2	121	*Research Methodology	100	3
GOS4	122	Female Health Care-II	100	3
GOS6	123	Infectious Gynecological Diseases-II	100	3
GOS8	124	*Biostatistics	100	3
GOS10	125	Uro Gynecological Disorder	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

### **Materia Medica (ILMUL ADVIAH) M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
MTM1	111	*Principles of Medicine	100	3
MTM3	112	Principle of Drug Action	50+50	2+1
MTM5	113	ANS & CNS Drugs	50+50	2+1
MTM7	114	Pharmacokinetics	50+50	2+1
MTM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
MTM2	121	*Designing Clinical Research	100	3
MTM4	122	Action of Simple Drugs	50+50	2+1
MTM6	123	Drugs of Animal & Mineral Origin	50+50	2+1
MTM8	124	Endocrine Pharmacology & Therapeutics	50+50	2+1
MTM10	125	* Computer Applications in Health Education	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**Community Medicine (SAMAJI TIBB)  
M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
COM1	111	*Principles of Medicine	100	3
COM3	112	Health Economic Evaluation	100	3
COM5	113	Public Health Administration-I	100	3
COM7	114	Communicable and Occupational Disease Epidemiology-I	100	3
COM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	15

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
COM2	121	*Designing Clinical Research	100	3
COM4	122	Epidemiology and Pharmacoepidemiology	100	3
COM6	123	Public Health Administration-II	100	3
COM8	124	Communicable and Occupational Disease Epidemiology-II	100	3
COM10	125	* Computer Applications in Health Education	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**History of Medicine (TAREEKH-E-TIBB)  
M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
HEM1	111	*Principles of Medicine	100	3
HEM3	112	Brief review of History of Medicine; eminent physician	100	3
HEM5	113	Introduction of medical literature in Europe	100	3
HEM7	114	Historical Perspectives of Medicine. The list of translators from Arabic to Latin; the School of Salerno	100	3
HEM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	15

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
HEM2	121	*Scientific Writing	100	3
HEM4	122	Medicine in the Muslim Period; eminent physicians, institutions and their contributions	100	3
HEM6	123	Introduction of medicine in the Indo-Pak sub-continent; the progress of medicine in the Islamic periods of the sub-continent	100	3
HEM8	124	Medicine during the British period; eminent men of Medicine in the sub-continent	100	3
HEM10	125	* Computer Applications in Health Education	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.



**Phytomedicine (Tibb al-A'ashaab-al-Nabatiat)  
M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
PTM1	111	*Principles of Medicine	50+50	2+1
PTM3	112	*Drugs of Natural Origin	50+50	2+1
PTM5	113	Common Unani Drugs for Specific Ailments-I	50+50	2+1
PTM7	114	Phytochemistry	100	3
PTM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
PTM2	121	Principles and Practices of Drug Development	50+50	2+1
PTM4	122	Contemporary Use of Herbal Drugs in Eastern Medicine	50+50	2+1
PTM6	123	Common Unani Drugs for Specific Ailments-II	50+50	2+1
PTM8	124	*Computer Applications in Health Education	100	3
PTM10	125	*Designing Clinical Research	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**Ethnomedicine (Al-Tibb Al-Arqi)  
M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
ETM1	111	*Principles of Medicine	100	3
ETM3	112	Medicinal Plants & Alternative Medicine-I	100	3
ETM5	113	Medicinal Plants & Phytochemical Investigation	50+50	2+1
ETM7	114	Ethnomedicine in Different Culture Areas	100	3
ETM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
ETM2	121	Ethnomedicine in Contemporary Medicine	50+50	2+1
ETM4	122	Medicinal Plants & Alternative Medicine-II	100	3
ETM6	123	Bioassay Techniques	50+50	2+1
ETM8	124	Product Development (Eastern Medicine)	100	3
ETM10	125	*Research Methodology	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

### **Rational Phytotherapy (Ilaj Bin Nabatat) M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
RPT1	111	*Principles of Medicine	50+50	2+1
RPT3	112	Introduction to Medicinal Plants & Materia Medica	100	3
RPT5	113	Traditional View of Phytotherapy Active Constituents & Pharmacology	50+50	2+1
RPT7	114	Dosage and Preparation of Phytomedicine	100	3
RPT9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
RPT2	121	Therapeutically effective drugs for Specific Disorders (of Pharmacological Groups)	50+50	2+1
RPT4	122	Pharmacologically Effective Unani Drugs (Ibn-e-Sina, Razi, Kabiruddin & others)	100	3
RPT6	123	Microbial Resistance and Immunity Boosting Drugs	50+50	2+1
RPT8	124	Development of Unani Herbal Teas and different Dosage Forms	100	3
RPT10	125	*Research Methodology	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

# DETAIL OF COURSE CONTENTS

## Medicine (MUALIJAT)

### M.Phil. Program First Year

Course Code	Course No.	First Semester	Marks	Cr. Hr.
MED1	111	*Principles of Medicine	100	3
MED3	112	*Therapeutics-I	50+50	2+1
MED5	113	*Therapeutics-II	50+50	2+1
MED7	114	Rational Phytotherapy-I	50+50	2+1
MED9	115	Internal Medicine-I	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
MED2	121	*Biostatistics	100	3
MED4	122	*Therapeutics-III	50+50	2+1
MED6	123	*Therapeutics-IV	50+50	2+1
MED8	124	Rational Phytotherapy-II	50+50	2+1
MED10	125	Internal Medicine-II	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

## FIRST SEMESTER

**MED1-111 \*Principles of Medicine (Theory) علمی**  
**Semester-I, (Credit Hours 3)**

- **Principles of Medicine** ( کلیات فی الطب ): Definition, Classification
- **Fundamental Principles** ( امور طبیعیہ ): Definition
- **Physis** ( طبیعت )
- **Elements** ( ارکان ): Definition, Theories, Four elements ( i) Fire ( آگ ) ii) Air ( ہوا ) iii) Water ( پانی ) , iv) Earth ( مٹی ) and their characteristics, Modern elements in human body, Role of elements in cell formation.
- **Temperament** ( مزاج ): Definition, Classification, Temperament of equatorials (Regions) Temperament of human body according to sex and stages of age.
- **Humors or body fluids** ( اخلاط ): Definition, Classification, Four humors; Blood ( دَم ) ( سفراء ) , Bile ( صفراء ) , Black Bile ( سوداء ) , Types of Digestion.
- **Organs** ( اعضاء ): Definition, Classification.

- **Pneuma ( ارواح )**: Definition, Classification, Theories.
- **Forces/Faculties ( قُوَى )**: Definition, Classification.
- **Functions ( افعال )**: Definition, Classification
- **States of Body ( احوال بدن )**: *Health, Disease, Intermediate; Definition, Diseases; Classification, Stages, Nomenclature*
- **Etiology ( علم الاسباب )**: Definition, Classification, General causes, Six Essential Causes ( اسباب سته ضروريه ): Air ( هوا ), Foods and Drinks ( مشروبات و مأكولات ), Movement and rest of body ( حركت و سکون بدنى ), Movement and rest of Pneuma ( Psychological activity ) ( نوم و يقظه ), Sleep and Awakens ( استفرغ و احتباس ), Elimination and retention ( استفرغ و احتباس ), Non- Essential causes.
- **Symptomatology ( علم العلامات )**: Definition, Classification, Symptoms of external and internal diseases, Symptoms (rules) for estimation of body temperament ( تشخيص مزاج کے دلائل ), Symptoms of Maltemperament/dysfunction of temperament ( سوء مزاج ), Symptoms of Plethora ( امتلاء ), Obstruction ( سدہ ), Gases ( ریح ), Swelling ( اورام ), Loss of continuity. ( تفرق اتصال ).
- **Pulse ( نبض )**: Definition, Conditions, 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.
- **Urine ( قارورہ )**: Definition, Conditions, Points to be considered in the Examination of urine, Normal urine, Effect of age and sex on urine.
- **Stool ( براز )**: Definition, Conditions, Points to be considered in the Examination of stool, Normal stool.
- **Preservation of Health Care System ( علم حفظ صحت )**: Introduction, Objectives, Why Death is unavoidable, Care in six essential causes, Exercise ( رياضت ), Bath ( حمام ), Massage ( دلک ).
- **Treatment/Therapeutics ( علم العلاج )**: Introduction and Classification, Treatment with Essential Causes / Regimental Therapy ( علاج بالتدبير ), Treatment with foods ( علاج بالغذاء ), Management in other essential causes.
- **Treatment with Medicine ( علاج بالدواء )**: Basic Principles, Law of Quality Principle ( قانون کیفیت ), Law of Quantity ( قانون کمیت ), Law of Time ( قانون وقت ).
- **Management of Dysfunction of Temperament ( سوء مزاج کا اصول علاج )**: Diversion ( اسہال ), Elimination ( اسہال ), Vomiting ( قے ), Venesection ( فصد ), Enema ( حقنہ ), Leeching ( تعلیق ), Cupping ( حجامہ ), Line of treatment of Swelling ( اورام ), Pain ( وجع ) and Obstruction ( سدہ ).
- **Treatment with Hand / Surgery: Line of treatment of loss of continuity and Abscess, Cauterization ( عمل کى )**

### 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).

**MED3-112 \*Therapeutics (Mualijat)-I Theory** (معالجات)  
**Semester-I, (Credit Hours 2+1)**

The basis of Therapeutic (الاساس للمداواة)

Study of Unani system of Medicine for different diseases (دراسة لنظام يوناني من الادوية للامراض المختلفة)

- a) Causes (الاسباب); diagnosis (التشخيص), prognosis and treatment of (تنبؤ و)
  - Hypertension (ارتفاع ضغط الدم) (العلاج:-), Angina Pectoris (الذبحة الصدرية), Hyperlipidemia Serology (الدهون في الدم), Diabetes (مرض سكري), Peptic Ulcers (قرحة المعدة), Chronic gastritis (التهاب المعدة مزمن), Amoebiasis (الاميبية), Diarrhoea (الاسهال), Spleenomegaly (عظم طحال), Hepatitis (التهاب الكبد الوبائي), Nephrotic Syndrome (المتلازمة الكوية), Renal Calculi (حصاة الكية)
- b) Diagnostic Investigation, Hematology, Biochemistry, Urology,

**Practical:**

Study of comprehensive clinical/Bed side techniques  
 Bed side techniques of hospitalized patient.

**MED5-113 \*Therapeutics (Mualijat)-II Theory** (معالجات)  
**Semester-I, (Credit Hours 2+1)**

**Therapeutics II–Theory:**

Comprehensive clinical management of human ailments with fundamental principles of Unani/Eastern Medicine.

**Therapeutics II–Practical**

- (a) Application of technique to diagnose of diseases by pulse, 25 cases.
- (b) To treat the patient by Unani techniques of Exercise (رياضة) and Massage (دلك).

**MED7-114 Rational Phytotherapy-I** (العلاج بالنباتات الرشيد) **Theory**  
**Semester-I, (Credit Hours 2+1)**

**Rational Phytotherapy – Theory**

The detailed determination of clinical approaches and its applications and implications to cure and prevent the diseases and promote health care. Introduction of phytomedicine and Phytotherapy, Herbal approaches to system dysfunction including Digestive System and Bowl. Billiary System, Liver, Cardio Vascular System (CVS), Respiratory System (RS), Central Nervous

System (CNS), Urinary tract, Female Reproductive System, Joint diseases, Skin diseases.

## **MED9-115 Internal Medicine-I / باطنى طب Theory Semester-I, (Credit Hours 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:

Arterial Hypertension فشار الدم قوى شريانى

G.I Bleeding (Upper G.I Bleeding, lower GI. Bleeding) جريان دموى معدة و معوى بالاى و زيرين

Acute and Choronic cough سعال حادومزمن

Abdominal Pain (Acute, chronic, recurrent) وجع شكم حادومزمن

Fever of Unknown Origin

Chest Pain وجع الصدر

Weight Loss كئى وزن

Differrential Diagnosis of Pleural Effusion تشخيص فارقه اسشفاء الرىه

## **SECOND SEMESTER**

## **MED2-121 \*Biostatistics (الا حصاء الحيوى) Theory Semester-II, (Credit Hours 3)**

### **Biostatistics – Theory:**

#### **Introduction:**

What is Biostatistics?

Application of statistics in biological sciences. Types of data,

Measure of central tendency (Mean Median and Mode)

Measures of dispersion (Variance, Standard Deviation)

Chebyshev Theorum, Z score

Frequency distribution, Presentation of data

Symmetry and Skewness, Empirical Rule

Concept of probability distribution

Binomial probability distribution mean and variance

Test involving binomial and normal distribution

Normal probability distribution mean and variance

#### **Sample and Population:**

Simple random sampling.

Sampling distribution of mean

Sampling distribution and standard error

Stratified random sampling

Systemic and cluster sampling

Student “t”

- Properties of “t” distribution
- Test of significance based on “t: distribution
- Estimation of parameters (Mean)
- Estimating differences between two means
- Chi-square distribution, it properties and application
- Chi-square distribution, it properties and application
- Estimating the Ratio of two Variances (F-distribution)

**Test of Hypothesis and significance:**

- Confidence intervals
- Test of homogeneity
- The analysis of variance models

**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

**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

**Biostatistics – Theory:**

- Statistical hypothesis
- Level of significance
- Test of significance
- Co-relation and Regression
- Test of significance (t-distribution and f distribution)

**Analysis of Variance:**

- One-way classification
- Two-way classification
- Multiple comparison tests such as LSD, P-values

**Goodness of fit test:**

- Contingency tables

**“F” Distribution:**

- Properties of “F” distribution
- Test of significance based on “F” distribution.
- Partitioning of sum of squares and degree of freedom

**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.



Computer application in Biostatistics.

**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

**Complete Statistical Package like SPSS, Mintab and Computer graphics**

**Recommended Books:**

**Biostatistics**

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

**Thesis (اطروحة/مقالة)**

The research work will be carried out in any branch of Clinical Methods and Therapeutics. 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.

**MED4-122 \*Therapeutics (معالجات)-III  
Semester-II, (Credit Hours 2+1)**

The basis of Therapeutics

Study of Unani system of Medicine for different diseases

- a) Causes; diagnosis, prognosis and treatment of: - Anemia(فقر الدم), Gout(النقرس), Arthritis(التهاب المفاصل), Sciatica(عرق النساء), Bronchitis(التهاب الشعب), Eczema(الأكزيما), Leucoderma(برص), Alopecia(ثعلبة), Insomnia (Sleep disorder)(الارق), Mumps (النكاف) Chicken pox(جدري), Bed Wetting(التبول في الفراش)
- b) X rays and Ultrasound, ECG and Echocardiography, CT scanning and MRI, Biopsy

**Practical:**

Study of comprehensive clinical/Bed side techniques

## Bed side techniques of hospitalized patient.

### MED6-123 \*Therapeutics (معالجات)-IV

Semester-II, (Credit Hours 2+1)

#### Therapeutics IV – Theory:

Special emphasis on clinical diseases and their intensive treatment with regimental therapy (علاج بالتدبير)

#### Therapeutics IV – Practical:

- (a) Study of samples of urine by different techniques (physical method, biochemical method) 25 cases
- (b) To treat the patient by Unani techniques of Turkish Bath (حمام), Phlebotomy/Blood Letting (فصد), Leach (علق / عمل تعليق / جونک لگانا), Enema (حقنه) and Cupping (حجامه).

### MED8-124 Rational Phytotherapy-II (العلاج بالنباتات الرشيد) Theory

Semester-II, (Credit Hours 2+1)

#### Rational Phytotherapy–Theory:

Discussion on Materia Medica with particular reference to Medicinal plants ( Andrographis (*Andrographis paniculata*), Arina flowers (*Arnica montana L.*), Fennel fruit (*Foeniculum vulgare Mill*), Fever jew (*Tanacetum parthenium*), Ginger (*Zingiber officinale Roscoe*), Ginkgo (*Ginkgo biloba L.*), Ginseng (*Panax ginseng*), Berberis bark (*Berberis vulgaris L.*, *Hydrastic root Hydrastis canadensis L.*), Turmeric (*Curcuma longa*), Valerian (*Valeriana officinalis L.*), Black Cohosh (*Cimicifuga racemosa L.*), Chaste tree (*Vitex agnus castus L.*), German Chamomile (*Matricaria recutita L. Rauchert*), Hawthorn (*Crataegus spp.*), Echinacea (*Echinacea Spp.*), Licorice (*Glycerrhiza glabra L.*, Saw palmetto (*Serenoa repens (Bartram)*, St Johnwort (*Hypericum perforatum L.*). The detailed determination of clinical approaches, its applications and implications to cure, prevent the diseases and promote health care. Skin, Trauma, Rheumatism and pain. Agents that increase resistance to diseases.

### MED10-125 Internal Medicine-II / باطنی طب – Theory

Semester-II, (Credit Hours 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:

Acute Diarrhoea اسهال حاد

Chronic Diarrhoea اسهال مزمن

Jaundice یرقان

Hyperglycaemia زیادتی شکر دموی

Cardiomyopathy مرض عضل دت القلب

Hyperlipidaemia زیادتی شحم دموی

Coma سبات

Epilepsy صرع

**Principle of Medicine (KULLIYAT-FIL-TIBB)**  
**M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
PEM1	111	*Principles of Medicine	100	3
PEM3	112	Humours in Health & Diseases-I	50+50	2+1
PEM5	113	Auxiliary Management of Diseases-I	50+50	2+1
PEM7	114	*Biostatistics	100	3
PEM9	115	*Research Methodology	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
PEM2	121	Fundamental of Temperament	50+50	2+1
PEM4	122	Humours in Health & Diseases-II	50+50	2+1
PEM6	123	Auxiliary Management of Diseases-II	50+50	2+1
PEM8	124	*Scientific Writing	100	3
PEM10	125	*Epidemiology	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**FIRST SEMESTER**

**PEM1-111 \*Principles of Medicine (Theory) علمی**  
**Semester-I, (Credit Hours 3)**

- **Principles of Medicine ( کلیات فی الطب )**: Definition, Classification
- **Fundamental Principles ( امورطبیعه )**: Definition
- **Physis ( طبیعت )**
- **Elements ( ارکان )**: Definition, Theories, Four elements ( ارکان اربعه ) i) Fire( آگ ) ii) Air( هوا ) iii) Water ( پانی ) , iv) Earth ( مٹی ) and their characteristics, Modern elements in human body, Role of elements in cell formation.
- **Temperament ( مزاج )**: Definition, Classification, Temperament of equatorials (Regions) Temperament of human body according to sex and stages of age.
- **Humors or body fluids ( اخلاط )**: Definition, Classification, Four humors; Blood ) ( دم , Phlegm ( بلغم ) , Bile ( صفراء ) , Black Bile ( سوداء ) , Types of Digestion.
- **Organs ( اعضاء )**: Definition, Classification.

- **Pneuma ( ارواح )**: Definition, Classification, Theories.
- **Forces/Faculties ( قوی )**: Definition, Classification.
- **Functions ( افعال )**: Definition, Classification
- **States of Body ( احوال بدن )**: Health, Disease, Intermediate; Definition, Diseases; Classification, Stages, Nomenclature
- **Etiology ( علم الاسباب )**: Definition, Classification, General causes, Six Essential Causes ( اسباب ستہ ضروریہ ): Air ( هوا ), Foods and Drinks ( مشروبات ), Movement and rest of body ( حرکت و سکون بدنی ), Movement and rest of Pneuma ( Psychological activity ) ( نوم و بقیظہ ), Sleep and Awakens ( استفرغ و احتباس ), Non- Essential causes.
- **Symptomatology ( علم العلامات )**: Definition, Classification, Symptoms of external and internal diseases, Symptoms (rules) for estimation of body temperament ( تشخیص مزاج کے دلائل ), Symptoms of Maltemperament/dysfunction of temperament ( سوء مزاج ), Symptoms of Plethora ( امتلاء ), Obstruction ( سدہ ), Gases ( ریاح ), Swelling ( اورام ), Loss of continuity ( تفرق اتصال ).
- **Pulse ( نبض )**: Definition, Conditions, 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.
- **Urine ( فارورہ )**: Definition, Conditions, Points to be considered in the Examination of urine, Normal urine, Effect of age and sex on urine.
- **Stool ( براز )**: Definition, Conditions, Points to be considered in the Examination of stool, Normal stool.
- **Preservation of Health Care System ( علم حفظ صحت )**: Introduction, Objectives, Why Death is unavoidable, Care in six essential causes, Exercise ( ریاضت ), Bath ( حمام ), Massage ( دلک ).
- **Treatment/Therapeutics ( علم العلاج )**: Introduction and Classification, Treatment with Essential Causes / Regimental The ( علاج بالتدبیر ), Treatment with foods ( علاج بالغذاء ), Management in other essential causes.
- **Treatment with Medicine ( علاج بالدواء )**: Basic Principles, Law of Quality Principle ( قانون کیفیت ), Law of Quantity ( قانون کمیت ), Law of Time ( قانون وقت ).
- **Management of Dysfunction of Temperament ( سوء مزاج کا اصول علاج )**: Diversion ( اسہال ), Elimination ( اسفراغ ) ( امالہ ), Vomiting ( قے ), Venesection ( فصد ), Enema ( حقنہ ), Leeching ( تعلیق ), Cupping ( حجامہ ), Line of treatment of Swelling ( اورام ), Pain ( وجع ) and Obstruction ( سدہ ).
- **Treatment with Hand / Surgery: Line of treatment of loss of continuity and Abscess, Cauterization ( عمل کی )**

### 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 Canon 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).

### **PEM3-112 Humours in Health & Disease-I – Theory, Semester-I (Credit Hours 2+1)**

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.

#### **B. Fundamentals of Humors – Practical**

### **PEM5-113 Auxiliary Management of Diseases-I – Theory Semester-I (Credit Hours 2+1)**

Role of diversion in treatment.

Concept of diversion, types, conditions, and method of diversion. Role of elimination in treatment.

#### **Auxiliary Management of Diseases – Practical**

Study of pulse by new techniques

### **PEM7-114 \*Biostatistics – Theory Semester-I (Credit Hours 3)**

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

**PEM9-115 \*Research Methodology – Theory  
Semester-I (Credit Hours 3)**

**Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

**Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

**Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

**Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study

- Case-control study
  - Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism
- Writing and funding a research proposal
- Writing methodology
- Ethical issues

### **Recommended Books:**

#### **Principle of 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**, 3<sup>rd</sup> 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.

**PEM2-121 Fundamentals of Temperament – Theory  
Semester-II (Credit Hours 2+1)**

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 30 patients according to temperament  
8 cases of sanguinous temperament

8 cases of bilious temperament

8 cases of phlegmatic temperament

8 cases of melancholic

All cases should be divided in to age group and gender

**PEM4-122 Humours in Health & Disease-II Theory  
Semester-II (Credit Hours 2+1)**

1. Analytical study of humors

- To study the four colour of humours
- To study the humours according to place

2. Fundamentals of Humors – Practical

**PEM6-123 Auxilliary Management of Diseases-II – Theory  
Semester-II (Credit Hours 2+1)**

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:**

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

**PEM8-124 \*Scientific Writing – Theory  
Semester-II (Credit Hours 3)**

Synopsis, thesis, research papers.



**PEM10-125      \*Epidemiology – Theory**  
**Semester-II (Credit Hours 3)**

- Health statistics and information systems
- Standards, tools and methods for data collection, compilation, analysis, and dissemination and country measurement and evaluation, collaborating with countries on data collection, analysis.
- Country monitoring and evaluation guidance.
- Classifications and indicators. The WHO Family of International Classification
- Monitoring Progress towards Universal Health Coverage at Country and Global Levels: Framework, Measures and Targets
- WHO and related publications
- Health data and statistics
  - ✓ Global Health Observatory (GHO)
  - ✓ Global Health Estimates (GHE)
  - ✓ WHO Mortality Database
- World Health Survey (WHS)
  - ✓ Participating countries and WHS related publications
  - ✓ Data archive and country reports
- Data and statistics
  - ✓ Global Health Observatory (GHO)
  - ✓ Life expectancy estimates
  - ✓ Child mortality estimates
  - ✓ Adult mortality estimates
  - ✓ Causes of death estimates
  - ✓ DALYs estimates
  - ✓ Projections of causes of death estimates
  - ✓ WHO mortality database
  - ✓ Statistical reports

**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. 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).
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8. Rasheed Ashraf Nadvi, **Firdaus-al-Hikmat**, Diamond Publications, Lahore (1996).

**Biostatistics:**

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3<sup>rd</sup> Edition, (1983).
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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.

**Obstetrics and Gynaecology (ILMUL VILADAT-VA-AMRAZ-E-NISWAN)  
M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
GOS1	111	*Principles of Medicine	100	3
GOS3	112	Female Health Care-I	100	3
GOS5	113	Infectious Gynecological Diseases-I	100	3
GOS7	114	Maternal and Child Health	100	3
GOS9	115	*Epidemiology	100	3
<b>Total Marks / Total Course 5</b>			500	15

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
GOS2	121	*Research Methodology	100	3
GOS4	122	Female Health Care-II	100	3
GOS6	123	Infectious Gynecological Diseases-II	100	3
GOS8	124	*Biostatistics	100	3
GOS10	125	Uro Gynecological Disorder	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses

**GOS1-111 \*Principles of Medicine (Theory) علمی**  
**Semester-I, (Credit Hours 3)**

- Concept of Gynaecological Disorders in Unani Medicine.
- Classification of maltemperament and their production in human body.
- Management of maltemperament according to different types of maltemperament their principles of management.
- Basic points to evaluate temperament.
- **States of Body** ( احوال بدن ): *Health, Disease, Intermediate; Definition, Diseases; Classification, Stages, Nomenclature*
- **Etiology** ( علم الاسباب ): Definition, Classification, General causes, Six Essential Causes ( اسباب ستہ ضروریہ ): Air ( هوا ), Foods and Drinks ( مشروبات و ماکولات ), Movement and rest of body ( حرکت و سکون بدنی ), Movement and rest of Pneuma (نوم و یقظہ ) ( Psychological activity), Sleep and Awakens ( استفرغ و احتباس ), Non- Essential causes. Elimination and retention ( استفرغ و احتباس )
- **Symptomatology**( علم العلامات): Definition, Classification, Symptoms of external and internal diseases, Symptoms (rules) for estimation of body temperament (تشخیص مزاج کے دلائل), Symptoms of Maltemperament/dysfunction of temperament (سوء مزاج), Symptoms of Plethora (امتلاء), Obstruction (سدہ), Gases (ریاح), Swelling (اورام), Loss of continuity. (تفرق اتصال).
- **Pulse**(نبض): Definition, Conditions, 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.
- **Urine**(قارورہ): Definition, Conditions, Points to be considered in the Examination of urine, Normal urine, Effect of age and sex on urine.
- **Stool**(براز): Definition, Conditions, Points to be considered in the Examination of stool, Normal stool.
- **Preservation of Health Care System** ( علم حفظ صحت ): Introduction, Objectives, Why Death is unavoidable, Care in six essential causes, Exercise (ریاضت), Bath (حمام), Massage (دک).
- **Treatment/Therapeutics**( علم العلاج): Introduction and Classification, Treatment with Essential Causes / Regimental The )rapy ( علاج بالتدبیر), Treatment with foods (علاج بالغذاء), Management in other essential causes.
- **Treatment with Medicine**: (علاج بالدواء): Basic Principles, Law of Quality Principle (قانون کیفیت), Law of Quantity (قانون کمیت), Law of Time (قانون وقت).
- **Management of Dysfunction of Temperament**(سوء مزاج کا اصول علاج): Diversion (امالہ), Elimination (استفرغ); Definition, Objectives, Conditions, Types, Sources (Purgation (اسہال), Vomiting (قے), Venesection (فصد), Enema (حقنہ), Leeching (تعلیق), Cupping (حجامہ), Line of treatment of Swelling (اورام), Pain (وجع) and Obstruction (سدہ).

- **Treatment with Hand / Surgery: Line of treatment of loss of continuity and Abscess, Cauterization(عمل کی)**

### **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).

## **GOS3-112 Female Health Care-I – (Gynaecological Disorders) Theory**

### **Semester-I (Credit Hours 3)**

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.

- Safe Medication Use
- Other Topics like cosmetics and nutrition
- Bleeding disorders
- Bladder control
- Anxiety disorders
- Anorexia nervosa
- Vaginal yeast infections
- Varicose veins and spider veins
- Viral hepatitis
- Violence against women
- Health Care Providers' Role in Screening and Counseling for Interpersonal and Domestic Violence
- Weight loss (and overweight and obesity)

## **GOS5-113 Infectious Gynaecological Diseases-I – Theory Semester-I (Credit Hours 3)**

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.

- **Vulval Diseases:** Inflammation (primary and secondary), pruritus vulval (حكة الفرج), abscess tumors of vulva, vulvae lesions.
- **Diseases of Ovaries**((امراض خصية الرحم): Oophritis(التهاب خصية الرحم), (acute and chronic) abscess tumors and cysts of ovaries.
- **Diseases of Urethra:** Retention of urine cystitis (acute and chronic) stricture.
- **Diseases of Mammary Glands:** Brief anatomy and physiology of mammary gland diseases of mammary gland.
- **Sexually Transmitted Diseases:** Gonorrhoea(سوزاك), syphilis(أتشك), Genital tuberculosis(تدرن اعضاء تناسليه), AIDS.
- **Infertility:** Sites causes investigation diagnosis treatment.
- **Population Planning and Contraception**(خاندانى منصوبه بندى و مانع حمل تدابير): Indication contra indication methods complications.
- **Hirsutism and Intersexuality:**Problems of marriage and sex.
- **Common Gynecological Operations and Instruments:** Preoperative preparations role of ultra sonography in gynecology.
- **Post Operative Complications and Its Management**
- **Ectopic Pregnancy**
- **Abortion**(اسقاط حمل)

## **GOS7-114 Maternal and Child Health – Theory Semester-I (Credit Hours 3)**

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.

## **GOS9-115 \*Epidemiology – Theory Semester-I (Credit Hours 3)**

- Health statistics and information systems
- Standards, tools and methods for data collection, compilation, analysis, and dissemination and country measurement and evaluation, collaborating with countries on data collection, analysis.
- Country monitoring and evaluation guidance.
- Classifications and indicators. The WHO Family of International Classification

- Monitoring Progress towards Universal Health Coverage at Country and Global Levels: Framework, Measures and Targets
- WHO and related publications
- Health data and statistics
  - ✓ Global Health Observatory (GHO)
  - ✓ Global Health Estimates (GHE)
  - ✓ WHO Mortality Database
- World Health Survey (WHS)
  - ✓ Participating countries and WHS related publications
  - ✓ Data archive and country reports
- Data and statistics
  - ✓ Global Health Observatory (GHO)
  - ✓ Life expectancy estimates
  - ✓ Child mortality estimates
  - ✓ Adult mortality estimates
  - ✓ Causes of death estimates
  - ✓ DALYs estimates
  - ✓ Projections of causes of death estimates
  - ✓ WHO mortality database
  - ✓ Statistical reports

<b>SECOND SEMESTER</b>
------------------------

**GOS2-121 \*Research Methodology – Theory  
Semester-II (Credit Hours 3)**

**Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

**Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

**Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

## **Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study
- Case-control study
  - Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism
- Writing and funding a research proposal
- Writing methodology
- Ethical issues

## **GOS4-122 Female Health Care-II (Gynaecological Disorders) – Theory Semester-II (Credit Hours 3)**

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.

- Pregnancy
- Prenatal care
- Breast feeding
- Menopause
- Breast Cancer
- Cervical Cancer
- Bone Density Screening

- Osteoarthritis
- Urinary tract problems
- Autoimmune disease
- Birth Control, HIV and HPV
- Diabetes
- Heart Health
- Mammograms

## GOS6-123 Infectious Gynaecological Diseases-II – Theory Semester-II (Credit Hours 3)

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.

- **Hormones** (ہارمونز): Description of different hormones, hormone replacement therapy (HRT) (ہارمون سے علاج) .
- **Changes in menstrual cycle** (درار طمث): Menstrual abnormalities (فتورات) (تحت الطمث), amenorrhoea (احتباس طمث), hypomenorrhoea (تحت الطمث), dysmenorrhoea (عسر طمث), oligomenorrhoea (طقت), polymenorrhoea (تعدد طمث), dysfunctional uterine bleeding (نزف الرحم) (عسر الوظيفي), postmenopausal bleeding (نزف الرحم بعد سن ياس) .
- **Vaginal Diseases** (امراض مہبل): Leucorrhoea (vaginal discharge) inflammation (التہاب مہبل) of vagina (gonorrhoeal tuberculosis and syphilitic and cystic) abscess of vagina tumor of vagina, vesico-vaginal fistula and recto-vaginal fistula cystocele rectocele (genital proplapse) vaginismus.
- **Diseases of Uterus** (امراض رحم): Endometritis acute and the chronic erosion tumor of the uterus fibroids adenoma cancer.
- **Diseases of Cervix**: Inflammation tumors.
- **Diseases of Fallopian Tubes** (امراض قاذفين و خصية الرحم): Salpingitis acute and chronic (التہاب قاذفين), abscess of fallopian tube tumors of fallopian tube.
- **Genital Tract Infection** (اعضاء تناسليه كى ضربات) : Infection of upper genital tract infections of lower genital tract genital tuberculosis.
- **Displacement of Uterus**: Prolapsed of uterus (انزلاق رحم), retroversion inversion of uterus (انقلاب الرحم), causes diagnosis management and treatment.
- **Gestational Trophoblastic Diseases**: Hydated form mole trophoblastic tumors.
- **Miscellaneous Gynecological Disorders**: Dysparunia dysmenorrhoea backache pelvic diseases hysteria leukoplakia pelvic floor injuries.



## **GOS8-124 \*Biostatistics – Theory**

### **Semester-II (Credit Hours 3)**

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, Mintab and Computer graphics

**GOS10-125            Uro Gynaecology and Disorder (Female Pelvic Floor) – Theory**  
**Semester II (Credit Hours 3)**

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.

**Recommended Books:**

**Obstetrics and Gynecology:**

1. Rashid Latif, **Gynaecology**, CBS Publishers, New Delhi, Gynecology (2013).
2. Jeffcoate, **Gynaecology**, Union book Publishers, Karachi (2014).
3. Bhattacharya, **Gynaecology**, Butterworth and Co Publishers, Lahore (1981).
4. Robert Kistner, **Gynaecology**, Mosby Publisher, USA (1990).

**Biostatistics:**

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3<sup>rd</sup> 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.

**Materia Medica (ILMUL ADVIAH)  
M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
MTM1	111	*Principles of Medicine	100	3
MTM3	112	Principle of Drug Action	50+50	2+1
MTM5	113	ANS & CNS Drugs	50+50	2+1
MTM7	114	Pharmacokinetics	50+50	2+1
MTM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
MTM2	121	*Designing Clinical Research	100	3
MTM4	122	Action of Simple Drugs	50+50	2+1
MTM6	123	Drugs of Animal & Mineral Origin	50+50	2+1
MTM8	124	Endocrine Pharmacology & Therapeutics	50+50	2+1
MTM10	125	* Computer Applications in Health Education	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**FIRST SEMESTER**

**MTM1-111 \*Principles of Eastern Medicine (Theory) علمی**  
**Semester-I, (Credit Hours 3)**

- **Principles of Medicine ( کلیات فی الطب )**: Definition, Classification
- **Fundamental Principles ( امورطبیعیہ )**: Definition
- **Physis ( طبیعت )**
- **Elements ( ارکان )**: Definition, Theories, Four elements ( ارکان اربعہ ) i) Fire ( آگ ) ii) Air ( هوا ) iii) Water ( پانی ) , iv) Earth ( مٹی ) and their characteristics, Modern elements in human body, Role of elements in cell formation.
- **Temperament ( مزاج )**: Definition, Classification, Temperament of equatorials (Regions) Temperament of human body according to sex and stages of age.

- **Humors or body fluids ( اخلاط )**: Definition, Classification, Four humors; Blood( نَم ), Phlegm ( بلغم ), Bile ( صفراء ), Black Bile ( سوداء ), Types of Digestion.
- **Organs ( اعضاء )**: Definition, Classification.
- **Pneuma ( ارواح )**: Definition, Classification, Theories.
- **Forces/Faculties ( قوى )**: Definition, Classification.
- **Functions ( افعال )**: Definition, Classification
- **States of Body ( احوال بدن )**: *Health, Disease, Intermediate; Definition, Diseases; Classification, Stages, Nomenclature*
- **Etiology ( علم الاسباب )**: Definition, Classification, General causes, Six Essential Causes( اسباب سته ضروريه ): Air ( هوا ), Foods and Drinks ( مأكولات و (حركت و سکون بدنى) Movement and rest of body (مشروبات و نوم) Sleep and Awakens (حرکت و سکون نفسانى) Psychological activity), Elimination and retention ( استفراغ و احتباس ), Non- Essential causes. ( و يقظه )
- **Symptomatology(علم العلامات)**: Definition, Classification, Symptoms of external and internal diseases, Symptoms (rules) for estimation of body temperament(تشخيص مزاج کے دلائل), Symptoms of Maltemperament/dysfunction of temperament(سوء مزاج), Symptoms of Plethora(امتلاء), Obstruction(سده), Gases(رياح), Swelling(اورام), Loss of continuity.(تفرق اتصال).
- **Pulse(نبض)**: Definition, Conditions, 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.
- **Urine(قاروره)**: Definition, Conditions, Points to be considered in the Examination of urine, Normal urine, Effect of age and sex on urine.
- **Stool(براز)**: Definition, Conditions, Points to be considered in the Examination of stool, Normal stool.
- **Preservation of Health Care System (علم حفظ صحت)**: Introduction, Objectives, Why Death is unavoidable, Care in six essential causes, Exercise (رياضت), Bath (حمام), Massage(دلك).
- **Treatment/Therapeutics(علم العلاج)**: Introduction and Classification, Treatment with Essential Causes / Regimental The (رپى) (علاج بالتدبير), Treatment with foods(علاج بالغذاء), Management in other essential causes.
- **Treatment with Medicine**, (علاج بالدواء), Basic Principles, Law of Quality Principle(قانون كيفيت), Law of Quantity(قانون كميت), Law of Time(قانون وقت).
- **Management of Dysfunction of Temperament(سوء مزاج كا اصول علاج)**: Diversion (امالہ), Elimination(استفراغ); Definition, Objectives, Conditions, Types, Sources (Purgation(اسهال), Vomiting(قے), Venesection(فصد), Enema(حقنه), Leeching(تعليق), Cupping(حجامه), Line of treatment of Swelling(اورام), Pain (وجع)and Obstruction(سده).
- **Treatment with Hand / Surgery: Line of treatment of loss of continuity and Abscess, Cauterization(عمل كى)**

### **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).

### **MTM3-112 Principle of Drug Action – Theory Semester-I (Credit Hours 2+1)**

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.

#### **Principle 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

### **MTM5-113 ANS & CNS Drugs (Autonomic Nervous System and Central Nervous System) – Theory Semester-I (Credit Hours 2+1)**

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

### **MTM7-114 Pharmacokinetics (Herbal Medicine) – Theory Semester-I (Credit Hours 2+1)**

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).

## **MTM9-115 \*Biostatistics – Theory**

### **Semester-I (Credit Hours 3)**

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

### **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).

#### **Biostatistics:**

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

**MTM2-121 \*Designing Clinical Research – Theory**  
**Semester-II (Credit Hours 3)**

**Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

**Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

**Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

**Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study
- Case-control study
  - Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism



- Writing and funding a research proposal
- Writing methodology
- Ethical issues

**MTM4-122 Action of Simple Drugs – Theory  
Semester-II (Credit Hours 2+1)**

(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

**MTM6-123 Drugs of Animal and Mineral Origin – Theory**  
**Semester-II (Credit Hours 2+1)**

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

**MTM8-124 Endocrine Pharmacology and Therapeutics – Theory**  
**Semester-II (Credit Hours 2+1)**

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.

**MTM10-125 \*Computer Applications in Health Education – Theory**  
**Semester-II (Credit Hours 3)**

- Introduction to computer application, knowledge regarding system parts and their uses.
- Importance of Microsoft Office.
- Computer virus.

- Strategies for the promotion of computer applications in healthcare delivery.
- Introduction of SPSS
- Date types
- Complete statistical analysis
- Reference writing: Endnote software
- Ethical issues
- Plagiarism software
- Computerized Systems for Health Professionals- Focuses upon skills and knowledge required of a professional in health sciences. Application of computers to gather, organize, and distribute health resources; apply computer assisted communication techniques and computer applications in data collection, analysis, and reporting in the health sciences.
- Biomedical Data: Their Acquisition, Storage, and Use.-
- Biomedical Decision Making: Probabilistic Clinical Reasoning.- Cognitive Science and
- Biomedical Informatics.- Computer Architectures for Health Care and Biomedicine.
- Evaluation of Biomedical and Health Information Resources.- Electronic Health Record Systems.- The Health Information Infrastructure.-
- Management of Information in Health Care Organizations.- Patient-Centered Care Systems.-
- Public Health Informatics.- Consumer Health Informatics and Personal Health Records.- Telehealth.- Patient Monitoring Systems.- Imaging Systems in Radiology.- Information Retrieval and Digital Libraries.- Clinical Decision-Support Systems.-
- Computers in Health Care Education.- Bioinformatics.- Translational Bioinformatics.- Clinical Research Informatics.- Health Information Technology Policy.- The Future of Informatics in Biomedicine.
- Applications of Computers in Health Care Delivery: An Overview
- Clinical laboratory and radiology, assisting in technology development (computer languages, software, and hardware),
- Enhancing the management of specific conditions such as HIV infection, and supporting health data coding and standards initiatives

### **Recommended Books:**

1. Matthew JZ, A Student guide to the statistical package for the Social Sciences ®, 2001, <http://www.amazon.com/The-SPSS%C2%AE-Book-Statistical-Sciences%C2%AE/dp/059518913X>.
2. Andy F, Discovering Statistics Using SPSS, 2007, [http://books.google.com.pk/books/about/Discovering\\_Statistics\\_Using\\_SPS\\_S.html?id=5253SAL5nDgC&redir\\_esc=y](http://books.google.com.pk/books/about/Discovering_Statistics_Using_SPS_S.html?id=5253SAL5nDgC&redir_esc=y).
3. SPSS Manuals  
[http://www.unt.edu/rss/class/Jon/SPSS\\_SC/Manuals/SPSS\\_Manuals.htm](http://www.unt.edu/rss/class/Jon/SPSS_SC/Manuals/SPSS_Manuals.htm)

4. Lawrence M. F, Medical informatics: Computer Applications in Health Care and Biomedicine (Health Informatics), 2<sup>nd</sup> Edition, Springer Publication 2011, [http://www.goodreads.com/book/show/1505743.Medical\\_Informatics](http://www.goodreads.com/book/show/1505743.Medical_Informatics).
5. Edward H. S, Leslie E. P, Medical informatics: Computer Applications in Health Care and Biomedicine, Springer, 2001-Computers-854 pages, [http://books.google.com.pk/books/about/Medical\\_informatics.html?id=PjFrAAAMAAJ&redir\\_esc=y](http://books.google.com.pk/books/about/Medical_informatics.html?id=PjFrAAAMAAJ&redir_esc=y)

### **Community Medicine (SAMAJI TIBB) M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
COM1	111	*Principles of Medicine	100	3
COM3	112	Health Economic Evaluation	100	3
COM5	113	Public Health Administration-I	100	3
COM7	114	Communicable and Occupational Disease Epidemiology-I	100	3
COM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	15

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
COM2	121	*Designing Clinical Research	100	3
COM4	122	Epidemiology and Pharmacoepidemiology	100	3
COM6	123	Public Health Administration-II	100	3
COM8	124	Communicable and Occupational Disease Epidemiology-II	100	3
COM10	125	* Computer Applications in Health Education	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

## COM1-111 \*Principles of Medicine (Theory) علمی Semester–I, (Credit Hours 3)

- **Principles of Medicine ( کلیات فی الطب )**: Definition, Classification
- **Fundamental Principles ( امورطبیعیہ )**: Definition
- **Physis ( طبیعت )**
- **Elements ( ارکان )**: Definition, Theories, Four elements ( i) Fire( آگ ) ii) Air ( ہوا ) iii) Water ( پانی ) , iv) Earth ( مٹی ) and their characteristics, Modern elements in human body, Role of elements in cell formation.
- **Temperament ( مزاج )**: Definition, Classification, Temperament of equatorials (Regions) Temperament of human body according to sex and stages of age.
- **Humors or body fluids ( اخلاط )**: Definition, Classification, Four humors; Blood ( دم ) , Phlegm ( بلغم ) , Bile ( صفراء ) , Black Bile ( سوداء ) , Types of Digestion.
- **Organs ( اعضاء )**: Definition, Classification.
- **Pneuma ( ارواح )**: Definition, Classification, Theories.
- **Forces/Faculties ( قوی )**: Definition, Classification.
- **Functions ( افعال )**: Definition, Classification
- **States of Body ( احوال بدن )**: *Health, Disease, Intermediate; Definition, Diseases; Classification, Stages, Nomenclature*
- **Etiology ( علم الاسباب )**: Definition, Classification, General causes, Six Essential Causes ( اسباب ستہ ضروریہ ) : Air ( ہوا ) , Foods and Drinks ( مشروبات و ماکولات ) , Movement and rest of body ( حرکت و سکون بدنی ) , Movement and rest of Pneuma ( Psychological activity ) ( نوم و یقظہ ) , Sleep and Awakens ( حرکت و سکون نفسانی ) , Elimination and retention ( استفراغ و احتباس ) , Non- Essential causes.
- **Symptomatology ( علم العلامات )**: Definition, Classification, Symptoms of external and internal diseases, Symptoms (rules) for estimation of body temperament (تشخیص مزاج کے دلائل) , Symptoms of Maltemperament/dysfunction of temperament (سوء مزاج) , Symptoms of Plethora (امتلاء) , Obstruction (سدہ) , Gases (ریاح) , Swelling (اورام) , Loss of continuity. (تفرق اتصال).
- **Pulse ( نبض )**: Definition, Conditions, 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.
- **Urine ( فارورہ )**: Definition, Conditions, Points to be considered in the Examination of urine, Normal urine, Effect of age and sex on urine.
- **Stool ( براز )**: Definition, Conditions, Points to be considered in the Examination of stool, Normal stool.

- **Preservation of Health Care System (علم حفظ صحت):** Introduction, Objectives, Why Death is unavoidable, Care in six essential causes, Exercise (رياضت), Bath (حمام), Massage (دلك).
- **Treatment/Therapeutics (علم العلاج):** Introduction and Classification, Treatment with Essential Causes / Regimental Therapy (علاج بالتدبير), Treatment with foods (علاج بالغذاء), Management in other essential causes.
- **Treatment with Medicine (علاج بالدواء):** Basic Principles, Law of Quality Principle (قانون كيفيت), Law of Quantity (قانون كميت), Law of Time (قانون وقت).
- **Management of Dysfunction of Temperament (سوء مزاج كا اصول علاج):** Diversion (اماله), Elimination (استفراغ); Definition, Objectives, Conditions, Types, Sources (Purgation (اسهال), Vomiting (قے), Venesection (فصد), Enema (حقنه), Leeching (تعليق), Cupping (حجامه), Line of treatment of Swelling (اورام), Pain (وجع) and Obstruction (سندھ).
- **Treatment with Hand / Surgery: Line of treatment of loss of continuity and Abscess, Cauterization (عمل كى)**

### 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).

### COM3-112 Health Economic Evaluation – Theory Semester-I (Credit Hours 3)

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.

### COM5-113 Public Health Administration-I – Theory Semester-I (Credit Hours 3)

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 7 cases

Visit to District Headquarters Hospital, and collect 7

cases Visit to Rehabilitation Centre, and collect 7 cases

Visit to Primary Health Care Center 7, and collect cases

Visit to Mentally Retarded Patients Centre, and collect 7

cases Visits to vaccination centres of various units

### **COM7-114 Communicable and Occupational Disease Epidemiology-I – Theory**

#### **Semester-I (Credit Hours 3)**

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.

### **COM9-115 \*Biostatistics – Theory**

#### **Semester-I (Credit Hours 3)**

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



## **Recommended Books:**

### **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

### **Biostatistics:**

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3<sup>rd</sup> 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.

## **SECOND SEMESTER**

### **COM2-121 \*Designing Clinical Research – Theory Semester-II (Credit Hours 3)**

#### **Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

#### **Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

#### **Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

## **Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study
- Case-control study
  - Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism
- Writing and funding a research proposal
- Writing methodology
- Ethical issues

## **COM4-122 Epidemiology and Pharmacoepidemiology – Theory Semester-II (Credit Hours 3)**

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.

## **COM6-123 Public Health Administration-II – Theory Semester-II (Credit Hours 3)**

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 7 cases  
Visit to District Headquarters Hospital, and collect 7 cases  
Visit to Rehabilitation Centre, and collect 7 cases  
Visit to Primary Health Care Center 7, and collect cases

Visit to Mentally Retarded Patients Centre, and collect 7 cases  
Visits to vaccination centres of various units

## **COM8-124 Communicable and Occupational Disease Epidemiology-II – Theory, Semester-II (Credit Hours 3)**

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.

## **COM10-125 \*Computer Applications in Health Education – Theory Semester-II (Credit Hours 3)**

- Introduction to computer application, knowledge regarding system parts and their uses.
- Importance of Microsoft Office.
- Computer virus.
- Strategies for the promotion of computer applications in healthcare delivery.
- Introduction of SPSS
- Date types
- Complete statistical analysis
- Reference writing: Endnote software
- Ethical issues
- Plagiarism software
- Computerized Systems for Health Professionals- Focuses upon skills and knowledge required of a professional in health sciences. Application of computers to gather, organize, and distribute health resources; apply computer assisted communication techniques and computer

applications in data collection, analysis, and reporting in the health sciences.

- Biomedical Data: Their Acquisition, Storage, and Use.-
- Biomedical Decision Making: Probabilistic Clinical Reasoning.- Cognitive Science and
- Biomedical Informatics.- Computer Architectures for Health Care and Biomedicine.
- Evaluation of Biomedical and Health Information Resources.- Electronic Health Record Systems.- The Health Information Infrastructure.-
- Management of Information in Health Care Organizations.- Patient-Centered Care Systems.-
- Public Health Informatics.- Consumer Health Informatics and Personal Health Records.- Telehealth.- Patient Monitoring Systems.- Imaging Systems in Radiology.- Information Retrieval and Digital Libraries.- Clinical Decision-Support Systems.-
- Computers in Health Care Education.- Bioinformatics.- Translational Bioinformatics.- Clinical Research Informatics.- Health Information Technology Policy.- The Future of Informatics in Biomedicine.
- Applications of Computers in Health Care Delivery: An Overview
- Clinical laboratory and radiology, assisting in technology development (computer languages, software, and hardware),
- Enhancing the management of specific conditions such as HIV infection, and supporting health data coding and standards initiatives

### **Recommended Books:**

1. Matthew JZ, A Student guide to the statistical package for the Social Sciences ®, 2001, <http://www.amazon.com/The-SPSS%C2%AE-Book-Statistical-Sciences%C2%AE/dp/059518913X>.
2. Andy F, Discovering Statistics Using SPSS, 2007, [http://books.google.com.pk/books/about/Discovering\\_Statistics\\_Using\\_SPS\\_S.html?id=5253SAL5nDgC&redir\\_esc=y](http://books.google.com.pk/books/about/Discovering_Statistics_Using_SPS_S.html?id=5253SAL5nDgC&redir_esc=y).
3. SPSS Manuals  
[http://www.unt.edu/rss/class/Jon/SPSS\\_SC/Manuals/SPSS\\_Manuals.htm](http://www.unt.edu/rss/class/Jon/SPSS_SC/Manuals/SPSS_Manuals.htm)
4. Lawrence M. F, Medical informatics: Computer Applications in Health Care and Biomedicine (Health Informatics), 2<sup>nd</sup> Edition, Springer Publication 2011, [http://www.goodreads.com/book/show/1505743.Medical\\_Informatics](http://www.goodreads.com/book/show/1505743.Medical_Informatics).
5. Edward H. S, Leslie E. P, Medical informatics: Computer Applications in Health Care and Biomedicine, Springer, 2001-Computers-854 pages, [http://books.google.com.pk/books/about/Medical\\_informatics.html?id=PjFrAAAMAAJ&redir\\_esc=y](http://books.google.com.pk/books/about/Medical_informatics.html?id=PjFrAAAMAAJ&redir_esc=y)

## History of Medicine (TAREEKH-E-TIBB) M.Phil. Program First Year

Course Code	Course No.	First Semester	Marks	Cr. Hr.
HEM1	111	*Principles of Medicine	100	3
HEM3	112	Brief review of History of Medicine; eminent physician	100	3
HEM5	113	Introduction of medical literature in Europe	100	3
HEM7	114	Historical Perspectives of Medicine. The list of translators from Arabic to Latin; the School of Salerno	100	3
HEM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	15

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
HEM2	121	*Scientific Writing	100	3
HEM4	122	Medicine in the Muslim Period; eminent physicians, institutions and their contributions	100	3
HEM6	123	Introduction of medicine in the Indo-Pak sub-continent; the progress of medicine in the Islamic periods of the sub-continent	100	3
HEM8	124	Medicine during the British period; eminent men of Medicine in the sub-continent	100	3
HEM10	125	* Computer Applications in Health Education	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**HEM1-111 \*Principles of Medicine – Theory**  
**Semester-I, (Credit Hours 3)**

- **Principles of Medicine ( کلیات فی الطب )**: Definition, Classification
- **Fundamental Principles ( امورطبیعیہ )**: Definition
- **Physis ( طبیعت )**
- **Elements ( ارکان )**: Definition, Theories, Four elements ( i) Fire ( ) ( ii) Air ( هوا ) ( iii) Water ( پانی ) ( iv) Earth ( مٹی ) and their characteristics, Modern elements in human body, Role of elements in cell formation.
- **Temperament ( مزاج )**: Definition, Classification, Temperament of equatorials (Regions) Temperament of human body according to sex and stages of age.
- **Humors or body fluids ( اخلاط )**: Definition, Classification, Four humors; Blood ( دم ), Phlegm ( بلغم ), Bile ( صفراء ), Black Bile ( سوداء ), Types of Digestion.
- **Organs ( اعضاء )**: Definition, Classification.
- **Pneuma ( ارواح )**: Definition, Classification, Theories.
- **Forces/Faculties ( قوی )**: Definition, Classification.
- **Functions ( افعال )**: Definition, Classification
- **States of Body ( احوال بدن )**: *Health, Disease, Intermediate; Definition, Diseases; Classification, Stages, Nomenclature*
- **Etiology ( علم الاسباب )**: Definition, Classification, General causes, Six Essential Causes ( اسباب ستہ ضروریہ ): Air ( هوا ), Foods and Drinks ( ماکولات و مشروبات ), Movement and rest of body ( حرکت و سکون بدنی ), Movement and rest of Pneuma ( Psychological activity ) ( نوم و حرکت و سکون نفسانی ), Sleep and Awakens ( نوم و یقظہ ), Non- Essential causes. ( استفراغ و احتباس ) ( Elimination and retention ) ( علم العلامات )
- **Symptomatology ( علم العلامات )**: Definition, Classification, Symptoms of external and internal diseases, Symptoms (rules) for estimation of body temperament ( تشخیص مزاج کے دلائل ), Symptoms of Maltemperament/dysfunction of temperament ( سوء مزاج ), Symptoms of Plethora ( امتلاء ), Obstruction ( سدہ ), Gases ( ریاح ), Swelling ( اورام ), Loss of continuity. ( تفرق اتصال )
- **Pulse ( نبض )**: Definition, Conditions, 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.
- **Urine ( فارورہ )**: Definition, Conditions, Points to be considered in the Examination of urine, Normal urine, Effect of age and sex on urine.
- **Stool ( براز )**: Definition, Conditions, Points to be considered in the Examination of stool, Normal stool.

- **Preservation of Health Care System (علم حفظ صحت):** Introduction, Objectives, Why Death is unavoidable, Care in six essential causes, Exercise (رياضت), Bath (حمام), Massage (دلك).
- **Treatment/Therapeutics (علم العلاج):** Introduction and Classification, Treatment with Essential Causes / Regimental Therapy (علاج بالتدبير), Treatment with foods (علاج بالغذاء), Management in other essential causes.
- **Treatment with Medicine (علاج بالدواء):** Basic Principles, Law of Quality Principle (قانون كيفيت), Law of Quantity (قانون كميت), Law of Time (قانون وقت).
- **Management of Dysfunction of Temperament (سوء مزاج كا اصول علاج):** Diversion (اماله), Elimination (استفراغ); Definition, Objectives, Conditions, Types, Sources (Purgation (اسهال), Vomiting (قے), Venesection (فصد), Enema (حقنه), Leeching (تعلیق), Cupping (حجامه), Line of treatment of Swelling (اورام), Pain (وجع) and Obstruction (سده).
- **Treatment with Hand / Surgery: Line of treatment of loss of continuity and Abscess, Cauterization (عمل كى)**

### 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).

### HEM3-112 Brief review of History of Medicine; eminent physician – Theory, Semester-I, (Credit Hours 3)

- Brief review of History of Eastern / Unani Medicine; eminent physician, Buqrat, Arastoo and Jalinoos.

### HEM5-113 Introduction of Medical Literature in Europe – Theory Semester-I, (Credit Hours 3)

- Introduction of medical literature in Europe;

## **HEM7-114 Historical Perspectives of Medicine – Theory Semester-I, (Credit Hours 3)**

- The list of translators from Arabic to Latin; the School of Salerno.

## **HEM9-115 \*Biostatistics – Theory Semester-I, (Credit Hours 3)**

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

### **Recommended Books:**

1. Ibn Abi Usaybiyah, **Uyun-al-Anba fi Tabqat-al-Atibba** (Arabic), C.C. R.U.M., 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. S.A.R. 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, **Tibbul -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**, Hamdard Academi, pp.01-208 (1955).

## SECOND SEMESTER

### **HEM2-121 \*Scientific Writing – Theory Semester-II (Credit Hours 3)**

Synopsis, thesis, research papers.

### **HEM4-122 Medicine in the Muslim Period – Theory Semester-II (Credit Hours 3)**

Medicine in the Muslim Period; eminent physicians, institutions and their contributions. Adul Qasim Zahravi, Ibn Wafid , Ibn Julul , Ibn Al-Jazzar, Ibn Baytar, Ibn Rushd, Ibn Zohar, Moosa Bin Maimoon, Ibn-e-, Jabir Bin Hayan, Zakaria Razi, Ibn Nafees and Ibn Sina.

### **HEM6-123 Introduction of Medicine in the Indo-Pak – Theory Semester-II (Credit Hours 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 Ghulam Gillani, Hakim Muhammad Hasan Qarshi, Hakim Kabeer uddin, Hakim Abdul Hamid Dehlavi.

### **HEM8-124 Medicine during the British period; eminent men of Medicine in the sub-continent – Theory Semester-II (Credit Hours 3)**

Hakim Ajmal Khan, Hakim Abdul Hameed, Hakim Muhammad Said, Hakim Muhammad Hassan Qurshi, Hakim Allama Kabeeruddin

- Introduction to computer application, knowledge regarding system parts and their uses.
- Importance of Microsoft Office.
- Computer virus.
- Strategies for the promotion of computer applications in healthcare delivery.
- Introduction of SPSS
- Date types
- Complete statistical analysis
- Reference writing: Endnote software
- Ethical issues
- Plagiarism software
- Computerized Systems for Health Professionals- Focuses upon skills and knowledge required of a professional in health sciences. Application of computers to gather, organize, and distribute health resources; apply computer assisted communication techniques and computer applications in data collection, analysis, and reporting in the health sciences.
- Biomedical Data: Their Acquisition, Storage, and Use.-
- Biomedical Decision Making: Probabilistic Clinical Reasoning.- Cognitive Science and
- Biomedical Informatics.- Computer Architectures for Health Care and Biomedicine.
- Evaluation of Biomedical and Health Information Resources.- Electronic Health Record Systems.- The Health Information Infrastructure.-
- Management of Information in Health Care Organizations.- Patient-Centered Care Systems.-
- Public Health Informatics.- Consumer Health Informatics and Personal Health Records.- Telehealth.- Patient Monitoring Systems.- Imaging Systems in Radiology.- Information Retrieval and Digital Libraries.- Clinical Decision-Support Systems.-
- Computers in Health Care Education.- Bioinformatics.- Translational Bioinformatics.- Clinical Research Informatics.- Health Information Technology Policy.- The Future of Informatics in Biomedicine.
- Applications of Computers in Health Care Delivery: An Overview
- Clinical laboratory and radiology, assisting in technology development (computer languages, software, and hardware),
- Enhancing the management of specific conditions such as HIV infection, and supporting health data coding and standards initiatives

### Recommended Books:

1. Matthew JZ, A Student guide to the statistical package for the Social Sciences ®, 2001, <http://www.amazon.com/The-SPSS%C2%AE-Book-Statistical-Sciences%C2%AE/dp/059518913X>.
2. Andy F, Discovering Statistics Using SPSS, 2007, [http://books.google.com.pk/books/about/Discovering\\_Statistics\\_Using\\_SPS\\_S.html?id=5253SAL5nDgC&redir\\_esc=y](http://books.google.com.pk/books/about/Discovering_Statistics_Using_SPS_S.html?id=5253SAL5nDgC&redir_esc=y).
3. SPSS Manuals  
[http://www.unt.edu/rss/class/Jon/SPSS\\_SC/Manuals/SPSS\\_Manuals.htm](http://www.unt.edu/rss/class/Jon/SPSS_SC/Manuals/SPSS_Manuals.htm)
4. Lawrence M. F, Medical informatics: Computer Applications in Health Care and Biomedicine (Health Informatics), 2<sup>nd</sup> Edition, Springer Publication 2011, [http://www.goodreads.com/book/show/1505743.Medical\\_Informatics](http://www.goodreads.com/book/show/1505743.Medical_Informatics).
5. Edward H. S, Leslie E. P, Medical informatics: Computer Applications in Health Care and Biomedicine, Springer, 2001-Computers-854 pages, [http://books.google.com.pk/books/about/Medical\\_informatics.html?id=PjFrAAAMAAJ&redir\\_esc=y](http://books.google.com.pk/books/about/Medical_informatics.html?id=PjFrAAAMAAJ&redir_esc=y)

## Phytomedicine (Tibb al-A'ashaab-al-Nabatiat) M.Phil. Program First Year

Course Code	Course No.	First Semester	Marks	Cr. Hr.
PTM1	111	*Principles of Medicine	50+50	2+1
PTM3	112	*Drugs of Natural Origin	50+50	2+1
PTM5	113	Common Unani Drugs for Specific Ailments-I	50+50	2+1
PTM7	114	Phytochemistry	100	3
PTM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
PTM2	121	Principles and Practices of Drug Development	50+50	2+1
PTM4	122	Contemporary Use of Herbal Drugs in Eastern Medicine	50+50	2+1
PTM6	123	Common Unani Drugs for Specific Ailments-II	50+50	2+1
PTM8	124	*Computer Applications in Health Education	100	3
PTM10	125	*Designing Clinical Research	100	3
<b>Total Marks / Total Course 5</b>			500	12+3

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**PTM1-111 \*Principles of Medicine–Theory  
Semester-I (Credit Hours 2+1)**

- **Principles of Medicine ( کلیات فی الطب ):** Definition, Classification
- **Fundamental Principles ( امورطبیعیہ ):** Definition
- **Physis ( طبیعت )**
- **Elements ( ارکان ):** Definition, Theories, Four elements ( i) Fire ( i) ( ارکان اربعہ ) ii) Air ( هوا ) iii) Water ( پانی ) , iv) Earth ( مٹی ) and their characteristics, Modern elements in human body, Role of elements in cell formation.
- **Temperament( مزاج ):** Definition, Classification, Temperament of equatorials (Regions) Temperament of human body according to sex and stages of age.
- **Humors or body fluids ( اخلاط ):** Definition, Classification, Four humors; Blood( دم ), Phlegm ( بلغم ), Bile ( صفراء ), Black Bile ( سوداء ), Types of Digestion.
- **Organs ( اعضاء ):** Definition, Classification.
- **Pneuma ( ارواح ):** Definition, Classification, Theories.
- **Forces/Faculties ( قوی ):** Definition, Classification.
- **Functions ( افعال ):** Definition, Classification
- **States of Body ( احوال بدن ):** Health, Disease, Intermediate; Definition, Diseases; Classification, Stages, Nomenclature
- **Etiology ( علم الاسباب ):** Definition, Classification, General causes, Six Essential Causes( اسباب ستہ ضروریہ ) : Air ( هوا ), Foods and Drinks ( ماکولات و مشروبات ) , Movement and rest of body ( حرکت و سکون بدنی ) , Movement and rest of Pneuma ( Psychological activity ) ( نوم و بیداری ) , Sleep and Awakens ( نوم و بیداری ) , Non- Essential causes. ( استفرغ و احتباس ) , Elimination and retention ( و یقظہ )
- **Symptomatology( علم العلامات ):** Definition, Classification, Symptoms of external and internal diseases, Symptoms (rules) for estimation of body temperament(تشخیص مزاج کے دلائل), Symptoms of Maltemperament/dysfunction of temperament(سوء مزاج), Symptoms of Plethora(امتلاء), Obstruction(سدہ), Gases(ریاح), Swelling(اورام), Loss of continuity.(تفرق اتصال).
- **Pulse(نبض):** Definition, Conditions, 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.
- **Urine(قارورہ):** Definition, Conditions, Points to be considered in the Examination of urine, Normal urine, Effect of age and sex on urine.
- **Stool(براز):** Definition, Conditions, Points to be considered in the Examination of stool, Normal stool.
- **Preservation of Health Care System ( علم حفظ صحت ):** Introduction, Objectives, Why Death is unavoidable, Care in six essential causes, Exercise (ریاضت), Bath (حمام), Massage(دلیک).

- **Treatment/Therapeutics(علم العلاج):** Introduction and Classification, Treatment with Essential Causes / Regimental The )rapy(علاج بالتدبير) , Treatment with foods(علاج بالغذاء), Management in other essential causes.
- **Treatment with Medicine،(علاج بالدواء):** Basic Principles, Law of Quality Principle(قانون كیفیت), Law of Quantity(قانون كمیت), Law of Time(قانون وقت).
- **Management of Dysfunction of Temperament (سوء مزاج كا اصول علاج):** Diversion (اماله), Elimination(استفراغ); Definition, Objectives, Conditions, Types, Sources (Purgation(اسهال), Vomiting(قے), Venesection(فصد), Enema(حقنه), Leeching(تعليق), Cupping(حجامه), Line of treatment of Swelling(اورام), Pain (وجع)and Obstruction(سده).
- **Treatment with Hand / Surgery: Line of treatment of loss of continuity and Abscess, Cauterization(عمل كى)**

### 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).

## PTM3-112 \*Drugs of Natural Origin – Theory Semester-I (Credit Hours 2+1)

### 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. Palmorosa
26. Black papper
27. Osimum
28. Mentha

### **Herbal Cosmetics**

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

### **II. Phytoceuticals**

- i) Methods of extracting essential oils
- ii) Methods of preparing flower remedies
- iii) Formulation and product development
- iv) Stability studies
- v) Quality control and quality assurance in phytoceuticals

## **PTM5-113 Common Unani Drugs for Specific Ailments-I – Theory**

### **Semester-I (Credit Hours 2+1)**

Unani drugs of every origin (plant, animal and mineral) are categorized in four degrees on the basis of their temperament, potentiality (potency) and power of effectiveness (efficacy), which in its entirety curb adverse drug reactions. Higher the degree, higher the adverse effects. A drug used in Unani system has documented temperament (hot, dry and cool and moist). The temperament of the drug is measured on a scale of one to three degrees. A drug may have temperament (*Har* as Hot and Cold, Hot and Dry, Hot and Moist; *Barid* as Cold and Hot, Cold and Dry, Cold and Moist; *Yabis* as Dry and Hot, Dry and Cold, Dry and Moist). This classification of herbs seems to be based on the clinical observations of the scholars and physicians of Unani system of Medicine.

Selected Drugs of Unani Medicine shall be dealt with in detail keeping in view their temperamental characteristics

- Plants used for the endocrine system—diabetes
- Hypoglycaemic and anti-diabetic herbs
- Plants used in cardiovascular ailments
- Arrhythmias and heart failures
- Heart failure, dropsy or oedema
- Venous insufficiency
- Anti-platelet and anti-sclerotic drugs
- Plants used against problems of the CNS
- Hypnotics and sedatives
- Plants used against the respiratory systems
- Broncho-dilators and decongestants
- Immuno-stimulants
- Cancer drugs from plants
- Plants used against infectious diseases
- Anti-malarial properties
- Plants and AIDS
- Medicinal plants, functional foods and nutraceuticals
- The functional food concept
- Categories of botanical functional food ingredients
- Traditional- functional foods
- Vitamins

## **PTM7-114 Phytochemistry – Theory**

### **Semester-I (Credit Hours 3)**

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

### **PTM9-115 \*Biostatistics – Theory Semester-I (Credit Hours 3)**

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, it 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 compression 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

### **Recommended Books:**

#### **Phytomedicine**

1. Evans W C, **Trease and Evan's Pharmacognosy**. 14<sup>th</sup> 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 Phytotherapy**, Churchill Living Stone, London (2000)
14. Wanger, H et al, (ed.), **Economic and Medicinal Plant Research**, (vol.1-5) Sangam, Landon (1993).
15. Warriar P, et al, (ed.), **Indian Medicinal Plants**, (vol 1-5). Sangam, Landon (1993).

<b>SECOND SEMESTER</b>
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**PTM2-121 Principles and Practices of Drug Development – Theory**

**Semester-II (Credit Hours 2+1)**

- General strategies for drug usage
- The science of drug discovery and development
- Economic and regulatory aspects of cancer drug development
- Principles of pharmacokinetics
- Organized by drug class, not disease
- Mechanism of action and structure of each drug, as well as its toxicity
- Complete discussion of drug interactions
- Covers all new drugs as well as those in development
- Pharmaceutical science, Preformulation, Drug, Formulation, Candidate Drug Selection,
- Biopharmaceutical, Dosage Forms, Transdermal, Drug Delivery,
- Drug Discovery, Pharmaceutical, Manufacturing, FDA, New drug applications,
- Patent, GMP compliance,
- Pre-approval inspections, Bioequivalence, Dosage Forms, Testing, Approved Excipients, Audit, Biotechnology Products,
- Drug Products, Regulatory affairs, Freeze drying, Uncompressed Solid Products, Powders, Capsules, Reconstitution,
- Good Manufacturing Practices, GPP, Proteins, Liquefiable Powders, Nanoparticles, Active Pharmaceutical Ingredients, Scale-up, Plant design,
- Regulatory Requirements, Process Validation, Quality Assurance,

Quality Control, Thermochemical Process, Sterile Bulk Manufacturing, Pharmaceutical process engineering, Drug production, Drug development, Computer aided design, Quality principles, Process Analytical Technology, Transfer, Bioprocessing, Evaporation, Distillation, Mixing, Clinical trial, Phase I, Phase II, Phase III, Adverse event

## **PTM4-122 Contemporary use of Herbal Drugs in Eastern Medicine – Theory**

### **Semester-II (Credit Hours 2+1)**

The initial approach to treatment in the Unani system entails the establishment of a regimen to normalize and balance the factors (e.g., air, water, fire and earth) involved in ailments and diseases. If this proves inadequate, then other means, such as treatment with natural medicines, may be recommended. Any Unani treatment prescribed by a hakim acts as an outside agent to help boost the patient's *tabiyat* and thus restore good health and a sense of well-being.

There are various therapeutic approaches available to the Unani Medicine Physicians (Hakims). *Ilaj-bi-ghiza*, or dietotherapy, involves recommending a specific diet, which is the simplest and most natural course of treatment. Relatively infrequent in modern Unani therapy is *ilaj-bi-misl*, or organotherapy, a mode of treatment that involves healing a diseased organ with the use of tissue extracts from the same organ of a healthy animal. *Ilaj-bi-dawa*, or pharmacotherapy, is the use of medicines by Unani hakims. This treatment method is considered by hakims to be natural, eco-friendly, and less intrusive and more effective than many other methods. The Unani system's pharmacopoeia is vast, enriched with more than 2,000 medicines derived from various herbal, mineral, and animal sources. There's yet another method i.e Regimental Therapy (*Ilaj-bil-Tadbir*).

Unani medications are often processed by classical methods of preparation as originally described in Greco-Arabic medicine. Unani medicines are used singly or are compounded with other substances to achieve synergistic, antagonistic, or detoxifying effects or simply as bases for effective ingestion and assimilation. **Detailed Discussion on following groups of Drug:**

*Ilaj-bi-ghiza*, or Dietotherapy (Keeping in view the temperament of Drugs- 10 Drugs)

*ilaj-bi-misl*, or Organotherapy (Keeping in view the temperament of Drugs- 6 Drugs)

*Ilaj-bi-dawa*, or Pharmacotherapy (Keeping in view the temperament of Drugs- 10 Drugs)

*Ilaj-bil-Tadbir* or Regimental Therapy *Fasd* (Venesection), *Hijaamat* (Cupping), *Idraare Baul* (Diauresis), *Ta'areeq* (Sweating), *Ishaal* (Purgation), *Hamam*

(Turkish bath), *Dalak* (Massage), *Kai* (Cauterization), *Qai* (Emesis), *Riyaazat* (Exercise), *Ta'leeq* (Leeching), *Huqna* (Enema), etc.

**PTM6-123 Common Unani Drugs for Specific Ailments-II – Theory**

**Semester-II (Credit Hours 2+1)**

- Eastern Medicine Pharmacopia

**PTM8-124 \*Computer Application in Health Education – Theory**  
**Semester-II (Credit Hours 3)**

- Introduction to computer application, knowledge regarding system parts and their uses.
- Importance of Microsoft Office.
- Computer virus.
- Strategies for the promotion of computer applications in healthcare delivery.
- Introduction of SPSS
- Date types
- Complete statistical analysis
- Reference writing: Endnote software
- Ethical issues
- Plagiarism software
- Computerized Systems for Health Professionals- Focuses upon skills and knowledge required of a professional in health sciences. Application of computers to gather, organize, and distribute health resources; apply computer assisted communication techniques and computer applications in data collection, analysis, and reporting in the health sciences.
- Biomedical Data: Their Acquisition, Storage, and Use.-
- Biomedical Decision Making: Probabilistic Clinical Reasoning.- Cognitive Science and
- Biomedical Informatics.- Computer Architectures for Health Care and Biomedicine.
- Evaluation of Biomedical and Health Information Resources.- Electronic Health Record Systems.- The Health Information Infrastructure.-
- Management of Information in Health Care Organizations.- Patient-Centered Care Systems.-
- Public Health Informatics.- Consumer Health Informatics and Personal Health Records.- Telehealth.- Patient Monitoring Systems.- Imaging Systems in Radiology.- Information Retrieval and Digital Libraries.- Clinical Decision-Support Systems.-
- Computers in Health Care Education.- Bioinformatics.- Translational Bioinformatics.- Clinical Research Informatics.- Health Information Technology Policy.- The Future of Informatics in Biomedicine.

- Applications of Computers in Health Care Delivery: An Overview
- Clinical laboratory and radiology, assisting in technology development (computer languages, software, and hardware),
- Enhancing the management of specific conditions such as HIV infection, and supporting health data coding and standards initiatives

### **Recommended Books:**

1. Matthew JZ, A Student guide to the statistical package for the Social Sciences ®, 2001, <http://www.amazon.com/The-SPSS%C2%AE-Book-Statistical-Sciences%C2%AE/dp/059518913X>.
2. Andy F, Discovering Statistics Using SPSS, 2007, [http://books.google.com.pk/books/about/Discovering\\_Statistics\\_Using\\_SPS\\_S.html?id=5253SAL5nDgC&redir\\_esc=y](http://books.google.com.pk/books/about/Discovering_Statistics_Using_SPS_S.html?id=5253SAL5nDgC&redir_esc=y).
3. SPSS Manuals  
[http://www.unt.edu/rss/class/Jon/SPSS\\_SC/Manuals/SPSS\\_Manuals.htm](http://www.unt.edu/rss/class/Jon/SPSS_SC/Manuals/SPSS_Manuals.htm)
4. Lawrence M. F, Medical informatics: Computer Applications in Health Care and Biomedicine (Health Informatics), 2<sup>nd</sup> Edition, Springer Publication 2011, [http://www.goodreads.com/book/show/1505743.Medical\\_Informatics](http://www.goodreads.com/book/show/1505743.Medical_Informatics).
5. Edward H. S, Leslie E. P, Medical informatics: Computer Applications in Health Care and Biomedicine, Springer, 2001-Computers-854 pages, [http://books.google.com.pk/books/about/Medical\\_informatics.html?id=PjFrAAAMAAJ&redir\\_esc=y](http://books.google.com.pk/books/about/Medical_informatics.html?id=PjFrAAAMAAJ&redir_esc=y)

## **PTM10-125 \*Designing Clinical Research – Theory Semester-II (Credit Hours 3)**

### **Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

### **Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

### **Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

## **Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study
- Case-control study
  - Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism
- Writing and funding a research proposal
- Writing methodology
- Ethical issues

## **Recommended Books:**

### **Phytomedicine**

1. Evans W C, **Trease and Evan's Pharmacognosy**. 14<sup>th</sup> 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. Warriar 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. ilkins M B,(ed.), **Advanced Plant Physiology**, Pitman Ltd, London (1985).
7. Combs J, et al, (ed.), **Techniques in Bioproductivity and Photosynththesis**, Pergamon Press, New York (1985).
8. Gallon J R, A E Chaplin, **An Introduction to Nitrogen Fixation**, Cassell Educational Ltd London (1987).
9. Pearcy 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**, 3<sup>rd</sup> 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.



## Ethnomedicine (Al-Tibb Al-Arqi) M.Phil. Program First Year

Course Code	Course No.	First Semester	Marks	Cr. Hr.
ETM1	111	*Principles of Medicine	100	3
ETM3	112	Medicinal Plants & Alternative Medicine-I	100	3
ETM5	113	Medicinal Plants & Phytochemical Investigation	50+50	2+1
ETM7	114	Ethnomedicine in Different Culture Areas	100	3
ETM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
ETM2	121	Ethnomedicine in Contemporary Medicine	50+50	2+1
ETM4	122	Medicinal Plants & Alternative Medicine-II	100	3
ETM6	123	Bioassay Techniques	50+50	2+1
ETM8	124	Product Development (Eastern Medicine)	100	3
ETM10	125	*Research Methodology	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

### FIRST SEMESTER

#### ETM1-111 \*Principles of Medicine – Theory Semester-I (Credit Hours 3)

- **Principles of Medicine** ( کلیات فی الطب ): Definition, Classification
- **Fundamental Principles** ( امورطبیعیہ ): Definition
- **Physis** ( طبیعت )
- **Elements** ( ارکان ): Definition, Theories, Four elements ( i) Fire ) ( ii) Air ( هوا ) ( iii) Water ( پانی ) , iv) Earth ( مٹی ) and their characteristics, Modern elements in human body, Role of elements in cell formation.
- **Temperament**( مزاج ): Definition, Classification, Temperament of equatorials (Regions) Temperament of human body according to sex and stages of age.

- **Humors or body fluids ( اخلاط )**: Definition, Classification, Four humors; Blood( نَم ), Phlegm ( بلغم ), Bile ( صفراء ), Black Bile ( سوداء ), Types of Digestion.
- **Organs ( اعضاء )**: Definition, Classification.
- **Pneuma ( ارواح )**: Definition, Classification, Theories.
- **Forces/Faculties ( قوى )**: Definition, Classification.
- **Functions ( افعال )**: Definition, Classification
- **States of Body ( احوال بدن )**: *Health, Disease, Intermediate; Definition, Diseases; Classification, Stages, Nomenclature*
- **Etiology ( علم الاسباب )**: Definition, Classification, General causes, Six Essential Causes( اسباب سته ضروريه ): Air ( هوا ), Foods and Drinks ( مأكولات و ( حركت و سکون بدنى ) Movement and rest of body, Movement and rest of Pneuma ( Psychological activity ) نوم Sleep and Awakens ( نوم ) , حرکت و سکون نفسانى( Psychological activity ) نوم Sleep and Awakens ( نوم ) , ( استفرغ و احتباس ) Elimination and retention , و يقظه ) Non- Essential causes.
- **Symptomatology( علم العلامات )**: Definition, Classification, Symptoms of external and internal diseases, Symptoms (rules) for estimation of body temperament( دلائل کے تشخیص , Symptoms of Maltemperament/dysfunction of temperament( سوء مزاج ), Symptoms of Plethora( امتلاء ), Obstruction( سدہ ), Gases( ریح ), Swelling( اورام ), Loss of continuity.( تفرق اتصال).
- **Pulse( نبض )**: Definition, Conditions, 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.
- **Urine( فارورہ )**: Definition, Conditions, Points to be considered in the Examination of urine, Normal urine, Effect of age and sex on urine.
- **Stool( براز )**: Definition, Conditions, Points to be considered in the Examination of stool, Normal stool.
- **Preservation of Health Care System ( علم حفظ صحت )**: Introduction, Objectives, Why Death is unavoidable, Care in six essential causes, Exercise ( رياضت ), Bath ( حمام ), Massage( دلک ).
- **Treatment/Therapeutics( علم العلاج )**: Introduction and Classification, Treatment with Essential Causes / Regimental The ( علاج بالتدبير ) rapy , Treatment with foods( علاج بالغذاء ), Management in other essential causes.
- **Treatment with Medicine**, ( علاج بالدواء ), Basic Principles, Law of Quality Principle( قانون کیفیت ), Law of Quantity( قانون کمیت ), Law of Time( قانون وقت ).
- **Management of Dysfunction of Temperament( سوء مزاج کا اصول علاج )**: Diversion ( امالہ ), Elimination( استفرغ ) ; Definition, Objectives, Conditions, Types, Sources ( Purgation( اسہال ), Vomiting( قے ), Venesection( فصد ), Enema( حقنہ ), Leeching( تعلیق ), Cupping( حجامہ ), Line of treatment of Swelling( اورام ), Pain ( وجع ) and Obstruction( سدہ ).
- **Treatment with Hand / Surgery: Line of treatment of loss of continuity and Abscess, Cauterization( عمل کی )**

### **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).

### **ETM3-112 Medicinal Plants & Alternative Medicine-I – Theory Semester-I (Credit Hours 3)**

History and Development of Ethno botany in Pakistan:

Materia Medica

Flora of Pakistan with reference to Econo-medicinal Plants

Applied /Modern Ethno botany.

### **ETM5-113 Medicinal Plants and Phytochemical Investigation – Theory Semester-I (Credit Hours 2+1)**

#### **Disciplines which Contribute to an ethno botanical Study:**

Botany (Taxonomy, Ecology, Pharmacognosy)

Anthropology (Communities, Local people, Indigenous Knowledge, Survey etc.)

Agronomy (Forestry, Horticulture)

Medical Sciences (Hakim, Doctor)

Chemistry (Phytochemist).

#### **A traditional use of Plant/ Animal /Mineral Resources:**

Uses for livelihood

Economic uses, Medicinal uses, Cultural uses, etc.

Wild plant Harvesting and Management

Conservation through Ethno botanical Gardens.

### **ETM7-114 Ethnomedicine in different Culture Areas – Theory Semester-I (Credit Hours 3)**

### ***Ethno botany and Development of Plant Resources:***

A traditional Knowledge and Development of plant products

Ethnic culture

Traditional knowledge Property Rights.

### **ETM9-115 \*Biostatistics – Theory**

#### **Semester-I (Credit Hours 3)**

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

### **Recommended Books:**

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3<sup>rd</sup> 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**, (McGraw-Hill) (1983).
4. Sher Muhammad Chaudhry, **Introduction to Statistical Theory**, Ilmi Kitab Khana, Urdu Bazar, Part-I and II, Lahore.

<b>SECOND SEMESTER</b>
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### **ETM2-121 Ethnomedicine in Contemporary Medicine – Theory Semester-II (Credit Hours 2+1)**

#### **Medical Ethno botany:**

History, Definition

Scientific Basis of Medical Ethno botany Traditional Medical System (Unani Medicine System)

Traditional Medical knowledge

Cultural Interpretation of Eastern /Unani System

Method of Studies

Traditional Medicine and New Drug Development

### **ETM4-122 Medicinal Plants & Alternative Medicine-II – Theory Semester-II (Credit Hours 3)**

History and Development of Ethno botany in Pakistan:

Materia Medica

Flora of Pakistan with reference to Econo-medicinal Plants

Applied /Modern Ethno botany.

## **ETM6-123 Bioassay Techniques – Theory Semester-II (Credit Hours 2+1)**

### ***Bioassay Techniques for Validity***

Anti-bacterial, anti-fungal, anti-malarial, anti-leishmanial assay, anti-inflammatory assay, enzyme inhibition assay etc.

Extraction Techniques.

## **Experimental**

### **A) *Ethno botanical Survey***

Area, climate, population, pattern, local information, name, ethnic background of the person interviewed. Name of disease along with symptoms plant name and parts used in formulation, the method of formulation and used. Taxonomists/ Botanists will collect the specimens for botanical identification photograph of people interviewed.

### **B) *Bioassay Techniques for Validity***

Anti-bacterial, anti-fungal, anti-malarial, anti-leishmanial assay, anti-inflammatory assay, enzyme inhibition assay etc.

### **C) *Extraction Techniques.***

### **D) *Phytochemical Investigation***

Conventional and modern chromatographic techniques, TLC, HPLC, recycling HPLC UV- Techniques  
Spectroscopy, Mass Spectrometry  
AAS for elemental detection  
Nuclear Magnetic Resonance  
FT-IR, UV etc.

### **E) *Product Formulation***

Product base on the ethnobotanic survey and scientific evaluation of medicinal herbs constitutions will be developed. Standardization on the biomarkers active component present by using modern HPLC, LC-NMR and LC-MS Techniques.

## **Recommended Books:**

1. **Atta ur Rahman, Choudhary, M.I and Thomsen, W.J. 2001.** Bioassay Techniques for Drug Development, Harwood Publishers. The Netherland.
2. **Balick M.J, Cox P.A.1997.** Plants and Culture. The Science of Ethnobotany Scientific American Library.
3. **Flora of Ziarat. 2009.** Ethnobotanic and Medicinal Importance. IUCN, GEF.
4. **Gary J. Martin 1997.** Ethnobotany Champan and Hall, 2-6 Boundary Row–UK.

5. **Hasan A., Khan M.A., Ahmad, M. 2007.** Authenticity of Folk Medicinal Plants of Pakistan. Taxonomic and Chemical Methods. Vol-I. Quad-i- Azam University, Islamabad.
6. **Shinwari, Z.K. Hamilton, A. Khan, A.A. 2002.** Proceeding of Workshop on Curriculum Development in Applied Ethno botany. WWF Pakistan. S.A. Q. Road, University Town, Peshawar, Pakistan.
7. **Shukla, R.S, Chandel, P.S, 2005.** A Textbook of Plant Ecology including Ethno botany and Soil Sciences. S. Chand and Company, Ram Nagar, New Delhi – India.

**ETM8-124 \*Product Development (Eastern Medicine) – Theory  
Semester-II (Credit Hours 3)**

**A Traditional use of Plant/ Animal /Mineral Resources:**

Uses for livelihood

Economic uses, Medicinal uses, Cultural uses, etc.

Wild plant Harvesting and Management

Conservation through Ethno botanical Gardens.

**ETM10-125 \*Research Methodology – Theory  
Semester-II (Credit Hours 3)**

**Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

**Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

**Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

**Observational studies**

- Cohort study
  - Prospective cohort

- Retrospective cohort
  - Time series study
- Case-control study
  - Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism
- Writing and funding a research proposal
- Writing methodology
- Ethical issues



**Rational Phytotherapy (Ilaj Bin Nabatat)  
M.Phil. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
RPT1	111	*Principles of Medicine	50+50	2+1
RPT3	112	Introduction to Medicinal Plants & Materia Medica	100	3
RPT5	113	Traditional View of Phytotherapy Active Constituents & Pharmacology	50+50	2+1
RPT7	114	Dosage and Preparation of Phytomedicine	100	3
RPT9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
RPT2	121	Therapeutically effective drugs for Specific Disorders (of Pharmacological Groups)	50+50	2+1
RPT4	122	Pharmacologically Effective Unani Drugs (Ibn-e-Sina, Razi, Kabiruddin & others)	100	3
RPT6	123	Microbial Resistance and Immunity Boosting Drugs	50+50	2+1
RPT8	124	Development of Unani Herbal Teas and different Dosage Forms	100	3
RPT10	125	*Research Methodology	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06 & marks 400

**Total Credit Hour 36 Total Marks: 1400**

- The student has to complete 24 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**FIRST SEMESTER**

**RPT1-111 \*Principles of Medicine – Theory  
Semester-I (Credit Hours 2+1)**

- **Principles of Medicine (كليات في الطب)**: Definition, Classification
- **Fundamental Principles (امور طبيعه)**: Definition
- **Physis (طبيعت)**

- **Elements ( ارکان اربعہ )**: Definition, Theories, Four primary elements ( (i) Fire ( آگ ) (ii) Air ( هوا ) (iii) Water ( پانی ), (iv) Earth ( مٹی ) and their characteristics, Modern elements in human body, Role of elements in cell formation.
- **Temperament ( مزاج )**: Definition, Classification, Temperament of equatorials (Regions) Temperament of human body according to sex and stages of age.
- **Humors or body fluids ( اخلاط )**: Definition, Classification, Four humors; Blood ( تم ), Phlegm ( بلغم ), Bile ( صفراء ), Black Bile ( سوداء ), Types of Digestion.
- **Organs ( اعضاء )**: Definition, Classification.
- **Pneuma ( ارواح )**: Definition, Classification, Theories.
- **Forces/Faculties ( قوی )**: Definition, Classification.
- **Functions ( افعال )**: Definition, Classification
- **States of Body ( احوال بدن )**: Health, Disease, Intermediate; Definition, Diseases; Classification, Stages, Nomenclature.
- **Etiology ( علم الاسباب )**: Definition, Classification, General causes, Six Essential Causes ( اسباب ستہ ضروریہ ): Air ( هوا ), Foods and Drinks ( ماکولات و مشروبات ), Movement and rest of body ( حرکت و سکون بدنی ), Movement and rest of Pneuma ( Psychological activity ) ( حرکت و سکون نفسانی ), Sleep and Wakefulness ( نوم و یقظہ ), Elimination and retention ( استفراغ و احتباس ), Non-Essential causes.
- **Symptomatology ( علم العلامات )**: Definition, Classification, Symptoms of external and internal diseases, Symptoms (rules) for estimation of body temperament ( تشخیص مزاج کے دلائل ), Symptoms of Maltemperament/dysfunction of temperament ( سوء مزاج ), Symptoms of Plethora ( امتلاء ), Obstruction ( سدہ ), Gases ( ریح ), Swelling ( اورام ), Loss of continuity ( تفرق اتصال ).
- **Pulse ( نبض )**: Definition, Conditions, 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.
- **Urine ( قارورہ )**: Definition, Conditions, Points to be considered in the Examination of urine, Normal urine, Effect of age and sex on urine.
- **Stool ( براز )**: Definition, Conditions, Points to be considered in the Examination of stool and Normal stool.
- **Preservation of Health Care System ( علم حفظ صحت )**: Introduction, Objectives, Why Death is unavoidable, Care in six essential causes, Exercise ( ریاضت ), Bath ( حمام ) and Massage ( دلك ).
- **Treatment/Therapeutics ( علم العلاج )**: Introduction and Classification, Treatment with Essential Causes / Regimental Therapy ( علاج بالتدبير ) , Treatment with foods ( علاج بالغذاء ) and Management in other essential causes.
- **Treatment with Medicine ( علاج بالدواء )**: Basic Principles, Law of Quality Principle ( قانون کیفیت ), Law of Quantity ( قانون کمیت ) and Law of Time ( قانون وقت ).
- **Management of Dysfunction of Temperament ( سوء مزاج کا اصول علاج )**: Diversion ( امالمہ ) Elimination ( استفراغ ); Definition, Objectives, Conditions,

Types, Sources Purgation (اسهال), Vomiting (قے), Venesection (فصد), Enema (حقنہ), Leeching (تعلیق), Cupping (حجامہ), Line of treatment of Swelling (اورام), Pain (وجع) and Obstruction (سندہ).

- **Treatment with Hand / Surgery: Line of treatment of loss of continuity and Abscess, Cauterization (عمل کنی)**

### **Recommended Books:**

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

## **RPT3-112 Introduction to Medicinal Plants & Materia Medica – Theory**

### **Semester-I (Credit Hours 3)**

- Introduction to Phytomedicines, Phytotherapy/Rational Phytotherapy, its Applications, Challenges and benefits.
- Pharmaceutical Preparation of Phytomedicine (Extracts, Standardization of Extracts, Quality of the herbal Material, Production Methods and Quality) Phytomedicines (Liquid, Syrups, Plant juices, Granule, Tablets, Capsule, Lozenges, Packaging).
- Briefly define the diseases such as Digestive System and Bowel (Anorexia, dyspepsia, bloating, flatulence, diarrhoea, constipation); Biliary System (biliary infection, biliary stone), The Liver (Jaundice, hepatitis) Cardiovascular system (Heart failure, hypotension /hypertension, atherosclerosis); Respiratory System (Flulike infection, cold, Cough); Urinary System (Urinary infections, Benign Prostatic Hypertrophy), Central Nervous System (depression, Sleep disturbances), Female Reproductive System (Premenstrual, dysmenorrhic complaints), Joint diseases (Rheumatoid arthritis), Skin diseases (eczema, acne) and herbal approaches to system dysfunctions.

## **RPT5-113 Traditional View of Phytotherapy Active Constituents & Pharmacology – Theory**

### **Semester-I (Credit Hours 2+1)**

- Major Therapeutic Principles or Pathways to Healing:
- Dietotherapy-Food as Medicine- Medicine as Food
- Hygiene and Lifestyle Modification
- Regimental Therapies (10-types)
- Unani Herbal Pharmacotherapy
- Body work and Deep Tissue Manipulations
- Surgery (minor surgery)
- *Mizaj al-Advia*- the Basis of Unani Drugs, Phytotherapeutic Action.
- The concept of temperament (*Mizaj*) in selection of drugs according to Disease
- Pharmacotherapy (*Ilaj bil advia*) according to their temperamental potency into four degrees (*Darjat-e Advia*)
- Use of Correctives (*Tadbir*) to minimize toxicity on the basis of temperament of drugs and its Impact of *Tadbir* in minimizing side-effects
- Use of substitutes (*Abdal al Advia*) for better efficacy and cost effective
- Classification of Unani Drugs according to their Temperament, Four Major Groups.

Examples of the Four Major Groups shall be selected and dealt with in detail by the Course incharge.

1st Order Drugs: Examples of Herbal Drugs and their Active Constituents

2<sup>nd</sup> Order Drugs: Examples of Herbal Drugs and their Active Constituents

3<sup>rd</sup> Order Drugs: Examples of Herbal Drugs and their Active Constituents

4<sup>th</sup> Order Drugs: Examples of Herbal Drugs and their Active Constituents

- Structure Activity Relationship of Unani Herbal Drugs

## **RPT7-114 Dosage and Preparation of Phytomedicine – Theory**

### **Semester-I (Credit Hours 3)**

Phytomedicine Introduction, History, and Current Scenario

The word 'phyto' derives from the Greek work plant; hence it means plant based medicine. Phytomedicine applies scientific research and the highest professional standards to the practice of herbal medicine. It takes its name

from the word used in other parts of Europe, where plant based medicines continue to be provided by doctors and pharmacists as 'phytomedicines'.

Phytomedicine, also called Botanical/Plant Medicine, differs from Chinese Herbalism. Phytotherapists use medicinal plants, which grow mainly in the western hemisphere, and do not combine their therapy with acupuncture.

Phytomedicine is based on the oldest and most universal system of medicine. Every early civilisation used plants as their main source of medicine, and most of the world's population still rely on them today. Around a quarter of all pharmaceutical drugs currently on the market are derived from plants.

In Phytomedicine, plant medicines are selected to stimulate or strengthen the body's own functions and immune system, hence support the body to restore itself to health. The phytotherapist approaches each patient as a unique individual in making a diagnosis and assessing his or her needs. Any herbal medicine prescribed may be a combination of plants chosen for the therapeutic actions required to treat that individual.

Phytomedicine in the Broad Context of Unani Medicine

Single Herbal Drugs (*Mufradat*) of Global Significance

Compound Herbal Drugs (*Murakkabaat*) of Eastern Medicine

Samarqandi's 14-Points for the development of Compound Formulations

Dosage Determination of Single Drugs (*Mufradat*)

Dose Determination of Compound Drugs (*Murakkabaat*)

Various Dosage Forms in Unani Medicine

Dose Determination for Substitute (Alternative) Drugs in Phytomedicine  
(*Abdal al-Adviya*)

## **RPT9-115 \*Biostatistics – Theory Semester-I (Credit Hours 3)**

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

### Recommended Books:

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3<sup>rd</sup> 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**, (McGraw-Hill) (1983).
4. Sher Muhammad Chaudhry, **Introduction to Statistical Theory**, Ilmi Kitab Khana, Urdu Bazar, Part-I and II, Lahore.

## SECOND SEMESTER

### RPT2-121 \*Therapeutically effective drugs for specific disorders (Pharmacological Groups) – Theory Semester-II (Credit Hours 2+1)

- Briefly define traditional view, active constituents, pharmacodynamics, pharmacokinetics indications supported by clinical trials, therapeutic uses, toxicology, dosage, preparations on the following plants: *Andrographis paniculata* (Acanthaceae) *Arnica montana*, *Cimicifuga racemosa* (Ranunculaceae), *Crataegus oxyantha* *Curcuma longa* (Zingiberaceae), *Echinacea* Spp. (Asteraceae), *Foeniculum vulgare* (Apiaceae), *Ginkgo biloba*, *Glycyrrhiza glabra*, *Hydrastis canadensis* (Ranunculaceae) *Hypericum perforatum*, *Matricaria chamomilla* (Asteraceae), *Panax ginseng* (Araliaceae) *Serenoa repens*, *Tanacetum parthenium*, *Valeriana officinalis* (Valerianaceae) *Vitex agnus castus* (Verbenaceae) *Zingiber officinale* (Zingiberaceae).
- **Skin, Trauma, Rheumatism and Pain:**  
Inflammation and injuries of the skin, Post traumatic and Postoperative conditions.  
Rheumatic Conditions and Treatment of Pain.
- **Agents that increase Resistance to Diseases:**  
Adaptogens and Immune stimulants.

### RPT4-122 Pharmacologically effective Unani Drugs (Ibn-e-Sina, Al-Razi, Kabiruddin & others) – Theory Semester-II (Credit Hours 3)

- Development of Pharmacology in Unani Medicine
- Greek Medicine, Greco-Arab Factors, Ibn Sina and Sub-continentant Pharmacology
- Rationality of Unani Drugs for Prevention of Adverse Drug Reactions
- Correlation of Pharmacovigilance and the Theory of Temperament
- Pharmacovigilance and Dietotherapy
- Pharmacoenvironmentology and Unani Medicine

- Modern Trends of Unani Drugs Monitoring
- Comparison of Evidence-based Unani Drugs with Drugs from Other Systems of Medicine, e.g. Chinese, Japanese and Koran formulations.
- Various Pharmacologically Effective Groups of Unani Medicine (Classes Described by Unani and Sub-continental authors/scholars e.g. Ibn Sina, Al-Razi, Kabiruddin and others).

### **RPT6-123 Microbial Resistance and Immunity Boosting Drugs – Theory**

#### **Semester-II (Credit Hours 2+1)**

- Introduction to **Medicinal Plants**, Historical aspect of Medicinal Plants, Classification of medicinal plants/or used as drugs obtained from roots, rhizomes, stems, woods, leaves, flowers, fruits, seeds and Medicinal uses.
- Definition of **Materia Medica**, Historical aspect of *Materia Medica*, Natural drugs resources (Plants, Animal, Mineral), Collection of raw materials, constitutes of crude drugs, organic / inorganic, acids, bases, compound bases, alkaloids, neutral principals, tannins, saponins, enzymes, hormones, oils, waxes, volatile oils, gums and resins.

### **RPT8-124 Development of Unani Herbal Teas and different dosage forms – Theory**

#### **Semester-II (Credit Hours 3)**

- Medicinal Teas Today
- Origin of the Word Tea
- Medicinal and Non medicinal Teas
- Medicinal Teas and Their Actions
- Various Forms of Medicinal Teas
- Mixtures of Cut and Dried Herbs
- Tea-bag Teas
- Soluble Teas
- Standard Approval for Tea Mixtures
- Tea compounded as prescribed by a Physician
- Guidelines for Tea Preparation
- Teas for Infants and children
- Adverse Effects and Risks.

#### **Recommended Books:**

1. Law, D. (1970). Herbal Teas for Health and Pleasure. Health Science Press, Bradford, Holsworthy, Devon, England. Pp.64.
2. Mazza, G. Oomah, B.D. (2000). Herbs, Botanicals & Teas. Technomic Publishing, 851 New Holland Avenue, Lancaster, USA. pp.416.
3. Said, Hakim M. (1996). Medicinal Herbal. Vol.1. A research publication of Bait al-Hikmah, *Hamdard Foundation Pakistan*, pp.294.



4. Schulz, V., Hansel, R. Tyeler, Varro E. (2001). Rational Phytotherapy. A Physician Guide to Herbal Medicine. 4<sup>th</sup> Edition. Springer-Verlag Berlin Heidelberg. Printed in Germany. pp.383.

**RPT10-125          Research Methodology – Theory**  
**Semester-II (Credit Hours 3)**

**Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

**Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

**Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

**Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study
- Case-control study
  - Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism

- Writing and funding a research proposal
- Writing methodology
- Ethical issues

### **Recommended Books:**

1. Anonymous (2003). Monographs of Unani Medicine. Drug Control and Traditional Medicine Division, National Institute of health, Islamabad-Pakistan pp. 664.
2. Baig, M.A.A. (2012). Life Processes Health Aging and Diseases. Ecosystem Approach to Life processes. Research & Development Publication and Hamdard Research Institute of Unani Medicine, Faculty of Eastern Medicine. Hamdard University, Karachi, Pakistan.pp263.
3. Bukhari, N. Kearney, D. (2009). Therapeutics. Pharmaceutical Press.UK.pp.228.
4. Hameed, A. and Vohora, S.B. (2001).Indian System of Medicine Skin diseases. *CBS Publishers & Distributors*, India.pp.174.
5. Lewis, Walter H. (2003). Medical Botany. Plants Affecting Human Health. Second Edition. *Johan Wiley & Sons*.USA.
6. Mills, S. and Bone, K.(2005). Principles and Practice of Phytotherapy. Modern Herbal Medicine. *Churchill Livingstone. An imprint of Elsevier Limited*. Printed In China.C/08.pp643.
7. R. Ghosh's Pharmacology *Materia Medica* and Therapeutics.
8. Schulz, V., Hansel, R. Tyeler, Varro E. (2001). Rational Phytotherapy. A Physician Guide to Herbal Medicine. 4<sup>th</sup> Edition. *Springer-Verlag Berlin Heidelberg*. Printed in Germany. pp.383.
9. Said, Hakim M. (1996). Medicinal Herbal. Vol.1. A research publication of Bait al-Hikmah, *Hamdard Foundation Pakistan*, pp.294.
10. Stewart, R.R. (1972). An Annotated Catalogue of the Vascular Plants of West Pakistan and Kashmir (Flora of West Pakistan). *Fakhri Printing Press*, Karachi.
11. Usmanghani, K. (1997). Researches on *Materia Medica*. Department of Pharmacognosy, *Faculty of Pharmacy*, University of Karachi, pp. 775.
12. Weiss, R Firtz (2001). Weiss's Herbal Medicine. *George Thieme Verlag*. New York, USA.

# **Admission and Examinations Post Graduate Studies (M.Phil.)**

## **MASTER OF PHILOSOPHY (Eastern Medicine)**

The Program provides Postgraduate education for Clinical Medicine and Therapeutics and other specified areas through its Master of Philosophy (M.Phil. in Eastern Medicine) Coursework, and research work.

Faculty of Eastern Medicine at Hamdard University at Karachi is striving hard in education and research initiative in Pakistan responding to the challenge of a changing and demanding health care system, and the lack of trained academics in Eastern Medicine research.

Master of Philosophy (M.Phil. in Eastern Medicine) Coursework: see the courses.

Master of Philosophy (Eastern Medicine) Research

The Master of Philosophy (M.Phil.) Research was established in 2002 and is the first research-based postgraduate in Eastern Medicine. This Master of Philosophy (M.Phil.) Research is available to qualified BEMS graduates the areas of evidence based medicine. Many of the projects run in the Master of Philosophy (M.Phil.) research will be supervised with research-trained medical Faculty at Hamdard University.

## **DOCTOR OF PHILOSOPHY (PhD.)**

### ***Requirements:***

The degree of Doctor of Philosophy (PhD.) is a research degree awarded for a thesis considered to be a substantially original contribution to the subject concerned. The resolutions of the Academic Council of degree of Doctor of Philosophy (PhD.) are given in The University Calendar, Statutes and Regulations.

For PhD. master's degree or equivalent degree is required as per HEC directives.

For the Master of Philosophy, a bachelor's degree (BEMS or equivalent degree) is required as per HEC directives.

Applicants should normally hold a master's degree or a bachelor's degree in Eastern Medicine from the University, or an equivalent qualification from another university or institution.

### ***Areas of Research***

Research in Eastern Medicine covers a broad spectrum of clinical sciences ranging from the design, formulations, clinical trials, through studies on methods of treatment of disease, to research on the clinical and sociological aspects of Unani therapies.

Master of Philosophy (M.Phil.) One year course work 1-5 years thesis work

All applicants for research degrees must contact the Faculty before making a formal application to establish that their research proposal is likely to be acceptable and that there are adequate resources and facilities for the research, as well as appropriate supervision. Formal applications must be accompanied by a four-page research proposal.

## **I MPhil. ADMISSIONS**

Admissions in Hamdard University are given according to merit

### **1. Eligibility for Admissions.**

Bachelor of Eastern Medicine (BEMS) or Equivalent Degree

### **2. Procedure and Condition of Admission.**

- (a) The application on the prescribed form shall be made to the Registrar through the Dean, Faculty of Eastern Medicine and the Chairman concerned. It shall be accompanied with the synopsis consisting of the objectives, plan of work, methodology and bibliography.
- (b) The Registrar shall present the application before the Board of Advance Studies and Research (BASR). The Board shall approve the title of the theses, the name of the research supervisor and course requirement.
- (c) The Registrar shall notify the decision of the BASR, with in 15 days of the meetings and shall direct the student to complete the admission formalities.
- (d) Every candidate shall pursue his/her research at the Hamdard University, Karachi or any other institution approved by the BASR.
- (e) No candidate shall, join another course of studies or appear at any other examination conducted by the University.

### **3. Progress Report**

The Student through his Supervisor will submit progress report every six months for the consideration of BASR, Hamdard University

### **4. Submission of Thesis**

- (a) The candidate shall not be allowed to submit the thesis after the end of 4<sup>th</sup> year from the date of admission
- (b) The plan of thesis should be as follows; statement of the problem to be investigated and introduction which should include the relevant background of the subject and scope of inquiry, precise description of methodology applied for the measurement or recording of experiments. The details of the data and analysis of the data should follow the results and discussion and conclusion. The precise literature citation should be on the standard format so that verification may be facilitated.

## **5. Examination of Thesis**

- (a) The thesis must be typewritten on one side of the paper with margin of 1-1/2 inch at each side. The number of pages of the thesis should not be less than 100 or more than 120 in any case. It shall be bound in cloth with title, name of the author and institution and year on the cover. Five copies of the thesis shall be submitted to the University of Evaluation.
- (b) On the submission of dissertation BASR, shall appoint three examiners to examine the thesis of the candidate. One of the examiners shall be the research supervisor, and the two shall be external examiners, not in the service of the university. If the three examiners give an adverse opinion about the thesis, it shall be rejected. However, the BASR on the recommendation of the Dean appoint additional (i.e.) fourth examiner and may consider to permits to revise the thesis in accordance to comments of examiners. After modification/revision thesis may be re-submitted after a period of three months.
- (c) On the basis of favorable (positive) reports, the viva voce examination shall be supervisor of research. The viva voce shall be conducted in the Office of the Dean who will act as a titular Chairman.
- (d) The degree shall be awarded on successful completion of the course work, approval of thesis by external, internal examiners and qualifying the viva voce examination.

## **II EXAMINATIONS AND GRADING**

### **1. Mid Term and Terminal Examination**

The examination held at the end of semester after the completion of a course shall be known as Terminal Examination. It will carry 100 marks each for theory and practical. This examination is a passing head i.e., a student must for each course obtain a minimum of 50% marks separately in theory and practical in this examination. In each semester students may be required to appear in quizzes, and submit assignments to be determined by the teacher concerned and for these HEC policy guidelines and implementation of semester system will be followed. The examination will:

- i. Theory: Mid Term Test 30 Marks, Terminal Examination 70 Marks.
- ii. Practical: Terminal Examination 100 Marks.

Mid-term test will be conducted in the middle of semester whereas Terminal examination will be held at the end of semester after the completion of course work. At least 50% marks in each course must be obtained to pass the examination.

## 2. **Grading System**

Grades given to a student in each course shall be of two types:

a. *Numerical Grade (NG)*

Assessment of performance on the basis of marks out of 100 fixed for a course of 3 or 4 credit hours unit is NG.

b. *Letter Grade (LG)*

Equivalent of numerical grades in terms of alphabets shall be termed as alphabetical grades. (Each letter carries a value in terms of numerical points).

c. *Grading*

### **Grading System**

<b><u>Numerical Grade</u></b>	<b><u>Letter Grade</u></b>	<b><u>Grade Point</u></b>
<b>90 &amp; above</b>	<b>A+</b>	<b>4.00</b>
<b>85-89</b>	<b>A</b>	<b>4.00</b>
<b>80-84</b>	<b>A-</b>	<b>3.80</b>
<b>75-79</b>	<b>B+</b>	<b>3.40</b>
<b>71-74</b>	<b>B</b>	<b>3.00</b>
<b>68-70</b>	<b>B-</b>	<b>2.80</b>
<b>64-67</b>	<b>C+</b>	<b>2.40</b>
<b>61-63</b>	<b>C</b>	<b>2.00</b>
<b>57-60</b>	<b>C-</b>	<b>1.80</b>
<b>53-56</b>	<b>D+</b>	<b>1.40</b>
<b>50-53</b>	<b>D</b>	<b>1.00</b>
<b>Below 50</b>	<b>Fails</b>	<b>0.00</b>

### **Degree Requirements:**

1. **Letter Grades A, B, C or D in all courses.**
2. **Cumulative Grade Point Average (CGPA)\* - Minimum 2.45, calculated for all semesters.**

$$\text{*CGPA} = \frac{\text{Sum of (credit hours X GPA)}}{\text{Total credit hours}}$$

d. *Incomplete Grade (IG)*

A student fails to complete a course for reason beyond his control may be granted incomplete (IG). This course can be completed subsequently, for which fresh course fee be deposited.

Any student who fails to maintain a GPA 1.8 shall be placed on probation.

For incomplete courses no point shall be given.

e. *Grade Point Average (GPA)*

Points obtained in each course shall be multiplied by the number of Credit Hours specified for that course, and then a grade point ratio

(GPR) shall be calculated. For example, the result of a 1<sup>st</sup> year student in a semester may be as follows:

f. *Cumulative Grade Point Average (CGPA)*

This is obtained by adding all the Grade Points of the courses during 5 years study period and dividing the total by the total number of credit hours.

### 3. **Attendance**

Attendance in each subject is compulsory for all students and no student shall be eligible to appear at any University examination unless he has attended 75 per cent attendance in the course.

- i. The attendance of students admitted in the Faculty will be counted from the 1<sup>st</sup> day of semester and not from the date of admission.
- ii. If a student is unable to attend classes continuously for 15 days or more without informing the Dean/Chairperson of the Department (in writing) his/her admission will also stand cancelled. In case of illness or other similar situation, application along with a medical certificate from a registered medical practitioner duly verified by the Senior Medical Officer of the University must be submitted within two days after the incident. This may be informed to the Vice Chancellor accordingly.
- iii. Original attendance register is to be submitted to the Dean/Chairperson for record and future reference.

### 4. **Maximum Duration for Completion of Degree**

The duration of completion M.Phil and Ph.D. degrees requirement will be followed as per University rules and regulations.

### 5. **Requirement for the Award of M.Phil. Degree**

- a. A student must have passed all prescribed courses.
- b. A student must have obtained a minimum CGPA 2.45
- c. Submission of M.Phil. Thesis and Approval of BASR

### 6. **Unfair means**

All the cases of unfair means will be forwarded to the unfair means Committee appointed for the purpose and the matter will be dealt with in accordance with the rules and regulations of the University.

### 7. **Interpretation of Semester Rules**

The decision of the Faculty Committee, headed by the Dean, The Controller of Examination and all the Heads of Department of Faculty of would be final for the interpretation of semester rules. In case of any appeal the said Committee would dispose it off on its merits.

# CURRICULUM FOR PhD. Course Work and Credit Hours SCHEME OF STUDIES

**Topic**

**Page No.**

PhD. Program 1 year course work and 5-7 years thesis work

**Topic:-**

- PhD. Credit Hours 219-223
- PhD. Course Contents 224-305
- PhD. Admission and Examination Rules 306-310

## CURRICULUM FOR Ph.D. COURSE WORK and Credit Hours SCHEME OF STUDIES

### Medicine (MUALIJAT) Ph.D. Program First Year

Course Code	Course No.	First Semester	Marks	Cr. Hr.
MED1	111	*Advance Studies in Principles of Medicine-I	50+50	2+1
MED3	112	*Computer Applications in Health Education	100	3
MED5	113	Gastroenterology	50+50	2+1
MED7	114	Biostatistics	100	3
MED9	115	Fundamentals of Clinical Investigation	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
MED2	121	*Advance Studies in Principles of Medicine-II	50+50	2+1
MED4	122	Contemporary Practice of Drug Development	100	3
MED6	123	Principle of Pharmacology	50+50	2+1
MED8	124	*Designing Clinical Research	100	3
MED10	125	Contemporary Issues in Health Promotion	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06



**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**Internal Medicine (BATNI TIBB)  
Ph.D. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
IMD1	111	*Advance Studies in Principles of Medicine	100	2+1
IMD3	112	Advance concepts in Respiratory disorders	100	3
IMD5	113	Advance concepts in Gastrointestinal disorders	100	3
IMD7	114	Advance concepts in Immunology	100	3
IMD9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
IMD2	121	* Computer Applications in Health Education	100	3
IMD4	122	Advance concepts in CVS disorders	100	3
IMD6	123	Advance concepts in UGS disorders	100	3
IMD8	124	Endocrinology	100	3
IMD10	125	*Designing Clinical Research	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06

**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

## Biochemistry (HAYATI KIMYA)

### Ph.D. Program First Year

Course Code	Course No.	First Semester	Marks	Cr. Hr.
BIO1	111	*Advance Studies in Principles of Medicine	100	2+1
BIO3	112	Cell Biochemistry	100	3
BIO5	113	Protein Chemistry	100	3
BIO7	114	Enzymology	100	3
BIO9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
BIO2	121	* Computer Applications in Health Education	100	3
BIO4	122	*Designing Clinical Research	100	3
BIO6	123	Chemistry of Respiration	100	3
BIO8	124	Biochemistry of Liver & Kidney	100	3
BIO10	125	Endocrinology	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06

**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

## Physiology (ILMUL AFAL)

### Ph.D. Program First Year

Course Code	Course No.	First Semester	Marks	Cr. Hr.
PHY1	111	*Advance Studies in Principles of Medicine	100	2+1
PHY3	112	Cell & Nerve Muscle Physiology	100	3
PHY5	113	Neurophysiology	100	3
PHY7	114	*Designing Clinical Research	100	3
PHY9	115	Body Fluids, Renal Physiology	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
PHY2	121	* Computer Applications in Health Education	100	3
PHY4	122	Endocrinology	100	3
PHY6	123	Blood Cardiovascular & Respiratory Physiology	100	3
PHY8	124	*Biostatistics	100	3
PHY10	125	GIT Physiology	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06

**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

## **Clinical Pathology & Microbiology (ILMUL-AMRAZ-VA-ILM-E-KHURD-HAYATIYAT)**

### **Ph.D. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
CPM1	111	*Concepts of Pathology in Unani Medicine	100	2+1
CPM3	112	Fundamentals of Immunology	100	3
CPM5	113	Medical Bacteria & Fungi	100	3
CPM7	114	Cellular Basis of Disease	100	3
CPM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
CPM2	121	*Designing Clinical Research	100	3
CPM4	122	Biology of Viruses	100	3
CPM6	123	Molecular & Cellular Microbiology	100	3
CPM8	124	Microbiological Diagnosis	100	3
CPM10	125	* Computer Applications in Health Education	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06

**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**Materia Medica (ILMUL ADVIAH)**  
**Ph.D. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
MTM1	111	*Advance Studies in Principles of Medicine	100	2+1
MTM3	112	Principle of Drug Action	100	3
MTM5	113	ANS & CNS Drugs	100	3
MTM7	114	Pharmacokinetics and pharmacodynamics of Eastern Medicine Drugs	100	3
MTM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
MTM2	121	*Designing Clinical Research	100	3
MTM4	122	Metabolism of Eastern Medicine drug	100	3
MTM6	123	Drugs of Animal & Mineral Origin	100	3
MTM8	124	Endocrine Pharmacology & Therapeutics	100	3
MTM10	125	* Computer Applications in Health Education	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06

**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

# DETAIL OF COURSE CONTENTS

## Medicine (MUALIJAT)

### Ph.D. Program First Year

Course Code	Course No.	First Semester	Marks	Cr. Hr.
MED1	111	*Advance Studies in Principles of Medicine-I	50+50	2+1
MED3	112	*Computer Applications in Health Education	100	3
MED5	113	Gastroenterology	50+50	2+1
MED7	114	Biostatistics	100	3
MED9	115	Fundamentals of Clinical Investigation	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
MED2	121	*Advance Studies in Principles of Medicine-II	50+50	2+1
MED4	122	Contemporary Practice of Drug Development	100	3
MED6	123	Principle of Pharmacology	50+50	2+1
MED8	124	*Designing Clinical Research	100	3
MED10	125	Contemporary Issues in Health Promotion	100	3
<b>Total Marks / Total Course 5</b>			500	13+2

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06

**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

### FIRST SEMESTER

#### **MED1-111 \*Advance Studies in Principles of Medicine-I – Theory**

#### **Semester-I (Credit Hours 2+1)**

1. Humours – nature, types and classification
2. Disruption of temperament related to organs, age and sex
3. Organs, nature and variety (bones, muscles, nerves, arteries and veins)
4. Faculties and functions

## **Practical:**

1. Temperament evaluation
2. Management of seasonal abnormalities

## **MED3-112 \*Computer Applications in Health Education – Theory**

### **Semester-I (Credit Hours 3)**(تطبيقات الحاسوب في التعليم الصحي)

- Introduction to computer application, knowledge regarding system parts and their uses.
- Importance of Microsoft Office.
- Computer virus.
- Strategies for the promotion of computer applications in healthcare delivery.
- Introduction of SPSS
- Date types
- Complete statistical analysis
- Reference writing: Endnote software
- Ethical issues
- Plagiarism software
- Computerized Systems for Health Professionals- Focuses upon skills and knowledge required of a professional in health sciences. Application of computers to gather, organize, and distribute health resources; apply computer assisted communication techniques and computer applications in data collection, analysis, and reporting in the health sciences.
- Biomedical Data: Their Acquisition, Storage, and Use.-
- Biomedical Decision Making: Probabilistic Clinical Reasoning.- Cognitive Science and
- Biomedical Informatics.- Computer Architectures for Health Care and Biomedicine.
- Evaluation of Biomedical and Health Information Resources.- Electronic Health Record Systems.- The Health Information Infrastructure.-
- Management of Information in Health Care Organizations.- Patient-Centered Care Systems.-
- Public Health Informatics.- Consumer Health Informatics and Personal Health Records.- Telehealth.- Patient Monitoring Systems.- Imaging Systems in Radiology.- Information Retrieval and Digital Libraries.- Clinical Decision-Support Systems.-
- Computers in Health Care Education.- Bioinformatics.- Translational Bioinformatics.- Clinical Research Informatics.- Health Information Technology Policy.- The Future of Informatics in Biomedicine.
- Applications of Computers in Health Care Delivery: An Overview
- Clinical laboratory and radiology, assisting in technology development (computer languages, software, and hardware),

- Enhancing the management of specific conditions such as HIV infection, and supporting health data coding and standards initiatives

### **Recommended Books:**

1. Matthew JZ, A Student guide to the statistical package for the Social Sciences ®, 2001, <http://www.amazon.com/The-SPSS%C2%AE-Book-Statistical-Sciences%C2%AE/dp/059518913X>.
2. Andy F, Discovering Statistics Using SPSS, 2007, [http://books.google.com.pk/books/about/Discovering\\_Statistics\\_Using\\_SPS\\_S.html?id=5253SAL5nDgC&redir\\_esc=y](http://books.google.com.pk/books/about/Discovering_Statistics_Using_SPS_S.html?id=5253SAL5nDgC&redir_esc=y).
3. SPSS Manuals [http://www.unt.edu/rss/class/Jon/SPSS\\_SC/Manuals/SPSS\\_Manuals.htm](http://www.unt.edu/rss/class/Jon/SPSS_SC/Manuals/SPSS_Manuals.htm)
4. Lawrence M. F, Medical informatics: Computer Applications in Health Care and Biomedicine (Health Informatics), 2<sup>nd</sup> Edition, Springer Publication 2011, [http://www.goodreads.com/book/show/1505743.Medical\\_Informatics](http://www.goodreads.com/book/show/1505743.Medical_Informatics).
5. Edward H. S, Leslie E. P, Medical informatics: Computer Applications in Health Care and Biomedicine, Springer, 2001-Computers-854 pages, [http://books.google.com.pk/books/about/Medical\\_informatics.html?id=PjFrAAAMA AJ&redir\\_esc=y](http://books.google.com.pk/books/about/Medical_informatics.html?id=PjFrAAAMA AJ&redir_esc=y)

## **MED5-113 Gastroenterology – Theory**

### **Semester-I (Credit Hours 2+1)(امراض الجهاز الهضمي)**

- History
- Disease classification
- Gastroenterological societies
- Research resources

### **Biliary**

- Acalculous Cholecystitis
- Acalculous Cholelithiasis
- Ampullary Carcinoma
- Bile Duct Strictures
- Bile Duct Tumors
- Biliary Disease
- Biliary Obstruction
- Biliary Trauma
- Carcinoma of the Ampulla of Vater
- Cholangiocarcinoma
- Cholangitis
- Cholecystitis
- Cholecystitis Empiric Therapy
- Cholecystitis Organism-Specific Therapy
- Cholecystocutaneous Fistula
- Choledochal Cysts
- Emphysematous Cholecystitis
- Gallbladder Cancer
- Gallbladder Empyema

- Gallbladder Mucocele
- Gallbladder Tumors
- Gallbladder Volvulus
- Gallstones (Cholelithiasis)
- Pericholangitis
- Postcholecystectomy Syndrome
- Primary Sclerosing Cholangitis
- Recurrent Pyogenic Cholangitis

## **Colon**

- Acute Megacolon
- Amebiasis
- Angiodysplasia of the Colon
- Bacterial Gastroenteritis
- Chronic Megacolon
- Clostridium Difficile Colitis
- Collagenous and Lymphocytic Colitis
- Colon Cancer
- Colonic Polyps
- Complications of Inflammatory Bowel Disease
- Constipation
- Cytomegalovirus Colitis
- Diverticulitis
- Diverticulitis Empiric Therapy
- Fistula-in-Ano
- Hereditary Colorectal Cancer
- Hirschsprung Disease
- Inflammatory Bowel Disease
- Irritable Bowel Syndrome
- Neutropenic Enterocolitis
- Pilonidal Disease
- Pseudomembranous Colitis Surgery
- Shigellosis
- Toxic Megacolon
- Ulcerative Colitis
- Villous Adenoma
- Whole-Bowel Irrigation

## **Esophagus**

- Achalasia
- Barrett Esophagus
- Boerhaave Syndrome
- Bulimia Nervosa
- Cytomegalovirus Esophagitis
- Esophageal Diverticula
- Esophageal Hematoma
- Esophageal Leiomyoma
- Esophageal Lymphoma



- Esophageal Motility Disorders
- Esophageal Spasm
- Esophageal Stricture
- Esophageal Webs and Rings
- Esophagitis
- Gastroesophageal Reflux Disease
- Hiatal Hernia
- Mallory-Weiss Tear
- Plummer-Vinson Syndrome
- Reflux Laryngitis
- Schatzki Ring
- Sengstaken-Blakemore Tube
- Tracheoesophageal Fistula

## **Intestine**

- Afferent Loop Syndrome
- Ascariasis
- Balantidiasis
- Bedside Ultrasonography for Gallbladder Disease
- Benign Neoplasm of the Small Intestine
- Celiac Sprue
- Chronic Mesenteric Ischemia
- Cyclospora
- Eosinophilic Gastroenteritis
- Fecal Incontinence
- Gastrointestinal Foreign Bodies
- Giardiasis
- Hernia Reduction
- Ileus
- Intestinal and Multivisceral Transplantation
- Intestinal Carcinoid Tumor
- Intestinal Fistula Surgery
- Intestinal Fistulas
- Intestinal Flukes
- Intestinal Leiomyosarcoma
- Intestinal Lymphangiectasia
- Intestinal Motility Disorders
- Intestinal Perforation
- Intestinal Polypoid Adenomas
- Intestinal Pseudo-Obstruction
- Intestinal Radiation Injury
- Intestinal Stromal Tumors
- Lactose Intolerance
- Malignant Neoplasms of the Small Intestine
- Meckel Diverticulum
- Mesenteric Lymphadenitis
- Mesenteric Tumors

- Nasogastric Intubation
- Paracentesis
- Pediatric Pyloric Stenosis
- Protein-Losing Enteropathy
- Radiation Enteritis and Proctitis
- Rigid Sigmoidoscopy
- Short-Bowel Syndrome
- Small Intestinal Diverticulosis
- Strongyloidiasis
- Tropical Sprue
- Viral Gastroenteritis
- Whipple Disease

## **Liver**

- Acute Liver Failure
- Alcoholic Hepatitis
- Amebic Hepatic Abscesses
- Autoimmune Hepatitis
- Budd-Chiari Syndrome
- Chyle Fistula
- Chylous Ascites
- Cirrhosis
- Conjugated Hyperbilirubinemia
- Dubin-Johnson Syndrome
- Fatty Liver
- Fibrolamellar Carcinoma
- Hepatic Cystadenomas
- Hepatic Cysts
- Hepatic Encephalopathy
- Hepatic Hemangiomas
- Hepatitis A
- Hepatitis B
- Hepatitis C
- Hepatitis C Organism-Specific Therapy
- Hepatitis D
- Hepatitis E
- Hepatocellular Adenoma
- Hepatorenal Syndrome
- Hydatid Cysts
- Isoniazid Toxicity
- Liver Abscess
- Liver Disease and Pregnancy
- Liver Transplantation
- Percutaneous Liver Biopsy
- Portal Hypertension
- Portal Vein Obstruction
- Portal-Systemic Encephalopathy

- Primary Biliary Cirrhosis
- Pyogenic Hepatic Abscesses
- Transjugular Liver Biopsy
- Yellow Fever

### **Pancreas**

- Acute Pancreatitis
- Chronic Pancreatitis
- Hyperamylasemia
- Pancreas Transplantation
- Pancreatic Cancer
- Pancreatic Divisum
- Pancreatic Necrosis and Pancreatic Abscess
- Pancreatic Pseudoaneurysm
- Pancreatic Pseudocysts
- Pancreatic Trauma
- Papillary Tumors

### **Stomach**

- Abdominal Compartment Syndrome
- Abdominal Pain in Elderly Persons
- Achlorhydria
- Acute Gastritis
- Atrophic Gastritis
- Benign Gastric Tumors
- CBRNE - Vomiting Agents - Dm, Da, Dc
- Chronic Gastritis
- Dumping Syndrome
- Gastric Cancer
- Gastric Gastrointestinal Stromal Tumors
- Gastric Outlet Obstruction
- Gastrinoma
- Gastrointestinal Stromal Tumors
- Gastrostomy Tube Replacement
- Helicobacter Pylori Infection
- Laparoscopic Gastric Bypass
- Laparoscopic Inguinal Hernia Repair
- Laparoscopic Lap Band Placement
- Omental Torsion
- Open Inguinal Hernia Repair
- Pediatric Gastroenteritis
- Peptic Ulcer Disease
- Peritoneal Cancer
- Solid Omental Tumors
- Stress-Induced Gastritis
- Zollinger-Ellison Syndrome

### **Systemic Disease**

- Antibiotic Therapy for Peritonitis

- Ascites
- Chylothorax
- Crohn Disease
- Enteropathic Arthropathies
- Familial Adenomatous Polyposis
- Food Poisoning
- Gastrointestinal Disease and Pregnancy
- Hemochromatosis
- Lower Gastrointestinal Bleeding
- Malabsorption
- Malignant Atrophic Papulosis
- Paroxysmal Nocturnal Hemoglobinuria
- Peritonitis and Abdominal Sepsis
- Peutz-Jeghers Syndrome
- Somatostatinomas
- Unconjugated Hyperbilirubinemia
- Upper Gastrointestinal Bleeding
- WDHA Syndrome
- Wilson Disease

## **MED7-114 Biostatistics – Theory**

**Semester-I (Credit Hours 3)**(الاحصاءات الحيوية لعلم الاوبئة)

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, it 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

**MED9-115 Fundamentals of Clinical Investigation – Theory**  
**Semester-I (Credit Hours 3) (اساسيات التشخيص السريرية)**

**Common clinical chemistry tests include:**

Electrolytes

- Sodium
- Potassium
- Chloride
- Bicarbonate

Renal (Kidney) Function Tests

- Creatinine
- Blood urea nitrogen

## Liver Function Tests

- Total protein (serum)
  - Albumin
  - Globulins
  - A/G ratio (albumin-globulin)
  - Protein electrophoresis
  - Urine protein
- Bilirubin; direct; indirect; total
- Aspartate transaminase (AST)
- Alanine transaminase (ALT)
- Gamma-glutamyl transpeptidase (GGT)
- Alkaline phosphatase (ALP)

## Cardiac Markers

- Troponin
- Myoglobin
- CK-MB
- B-type natriuretic peptide (BNP)

## Minerals

- Calcium
- Magnesium
- Phosphate
- Potassium
- Vitamin D

## Blood Disorders

- Iron
- Transferrin
- TIBC
- Vitamin B12
- Folic acid

## Miscellaneous

- Glucose
- C-reactive protein
- Glycated hemoglobin (HbA1c)
- Uric acid
- Arterial blood gases ( $[H^+]$ ,  $P_{CO_2}$ ,  $P_{O_2}$ )
- Adrenocorticotrophic hormone (ACTH)
- Stool DR & fecal occult blood test (FOBT)
- WBC count w/differential
- Quantitative immunoglobulins (IgG, IgA, IgM)
- Erythrocyte sedimentation rate (ESR)
- Quantitative alpha-1-antitrypsin (AAT) level
- Throat culture
- Nasal smear for eosinophils
- Nasopharyngeal culture
- Urinalysis
- Purified protein derivative (tuberculin) (PPD)/skin tests
- Glucose-FBS, RBS, GTT

- Chest X-ray (×3)
- Electrocardiogram (ECG)

## Approaches for Establishing a Diagnosis Based on Laboratory Test Results

The principal approaches for establishing a diagnosis based on laboratory test results include:<sup>4</sup>

- Hypothesis deduction.
- Pattern recognition.
- Medical algorithms.
- Rifle versus shotgun approach.

## Clinical Performance Characteristics of Laboratory Tests

- *Prevalence*
- *Sensitivity*
- *Specificity*
- *Efficiency*
- *Positive Predictive Value (PPV)*
- *Negative Predictive Value (NPV)*
- *Sum of Sensitivity and Specificity*

Receiver-Operator Characteristic (ROC) Curves

Reference Interval for Interpreting Laboratory Test Results

Critical Difference Between Consecutive Laboratory Test Results

## Recommended Books:

1. **Inflammatory Disorders of the Nervous System: Pathogenesis, Immunology, And Clinical Management**, Edited by Alireza **Minagar, MD, J. Steven Alexander, Ph. D**  
Shreveport, LA, Humana Press, New Jersey; 2005.
2. Brunner & Suddarth, *Hand book of Laboratory & Diagnostic Tests*, Walters Kluwer Lippincott, Williams & Wilkins.
3. *Lange Pocket Guide to Diagnostic Test*, 3<sup>rd</sup> edition, Dina Nicoll, Stephen J. NcPhee, Michal Pignone, Tony M. Chou, William M. Delmer, Lang Medical Books/Megrew Hill.
4. **Functional Neurology for Practitioners of Manual Therapy**, Randy W Beck, Churchill Livingstone Elseveir, Edinburgh, 2008.
5. *Clinical Laboratory Medicine “LWW Doody's all reviewed collection McClatchey: Clinical Laboratory Medicine”*, Publisher Lippincott Williams & Wilkins, 2002, ISBN 0683307517, 9780683307511, Edition Illustrated, Editor Kenneth D. McClatchey, 1693 pages.

## SECOND SEMESTER

### **MED2-121 \*Advance Studies in Principles of Medicine-II – Theory**

**Semester-II (Credit Hours 2+1) (علم الاوبئة)**

1. Concept of Disorders in Unani Medicine.
2. Signs and symptoms related to:-
  - a. Pulse
  - b. Urine
  - c. Stool
3. Classification of maltemperament and their production in human body.
4. Management of maltemperament according to different types of maltemperament their principles of management.
5. Basic points to evaluate temperament.
6. Qualitative of Quantitative aspect of humours.
7. Specific ratio of humours in body and disturbance in this ratio.
8. Role of six essential causes in preservation of health.

#### **Practical:**

1. Management of temperamental abnormalities
2. General regimen for diseases

### **MED4-122 Contemporary Practice of Drug Development – Theory**

**Semester-II (Credit hours 3) (مبادئ وممارسات التنمية الادوية)**

- General strategies for drug usage
- The science of drug discovery and development
- Economic and regulatory aspects of cancer drug development
- Principles of pharmacokinetics
- Organized by drug class, not disease
- Mechanism of action and structure of each drug, as well as its toxicity
- Complete discussion of drug interactions
- Covers all new drugs as well as those in development
- Pharmaceutical science, Preformulation, Drug, Formulation, Candidate Drug Selection,
- Biopharmaceutical, Dosage Forms, Transdermal, Drug Delivery,
- Drug Discovery, Pharmaceutical, Manufacturing, FDA, New drug applications,
- Patent, GMP compliance,
- Pre-approval inspections, Bioequivalence, Dosage Forms, Testing, Approved Excipients, Audit, Biotechnology Products,
- Drug Products, Regulatory affairs, Freeze drying, Uncompressed Solid Products, Powders, Capsules, Reconstitution,



- Good Manufacturing Practices, GPP, Proteins, Liquefiable Powders, Nanoparticles, Active Pharmaceutical Ingredients, Scale-up, Plant design,
- Regulatory Requirements, Process Validation, Quality Assurance, Quality Control, Thermochemical Process, Sterile Bulk Manufacturing, Pharmaceutical process engineering, Drug production, Drug development, Computer aided design, Quality principles, Process Analytical Technology, Transfer, Bioprocessing, Evaporation, Distillation, Mixing,
- Clinical trial, Phase I, Phase II, Phase III, Adverse event

### **MED6-123 Principle of Pharmacology – Theory** **Semester-II (Credit hours 2+1)**(مبادئ علم الصيدلة)

- Introduction to Pharmacology
- History and Role of Pharmacology
- Pharmacology and Its Subdivisions-basic principles of pharmacokinetics and pharmacodynamics of drugs
- Pathophysiologic Basis of Drug Therapy
- Drug Development and Safety
- Toxicology
- Significant Discovery in Pharmacology
- Pharmacy and Related Sciences
- Natural Sources of Drugs
- Synthetic Drugs
- Pharmaceutical Preparations
- Routes of drug Administration
- Neuropharmacology I: Drugs for Movement Disorders
- Neuropharmacology II: Anxiolytics and Antidepressants
- Lipid Lowering Drugs
- Vasoactive Drugs : Heart Failure
- Immunosuppression for Solid Organ Transplantation
- Antimicrobials
- Antiinflammatory Drugs

### **MED8-124 \*Designing Clinical Research – Theory** **Semester-II (Credit hours 3)**(تصميم البحوث السريرية)

#### **Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

#### **Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies

- Observational studies

### **Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

### **Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study
- Case-control study
  - Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism
- Writing and funding a research proposal
- Writing methodology
- Ethical issues

## **MED10-125 Contemporary Issues in Health Promotion – Theory**

### **Semester-II (Credit hours 3) (القضايا المعاصرة في تعزيز الصحة)**

- Foundations of Health Promotion
- Evaluating Health Promotion—Progress, Problems and solutions
- Phases of health promotion implementation
- Integrating an Empowerment Model of Health Literacy Promotion Into Home-Based Parent Education

- How can the functioning and effectiveness of networks in the settings approach of health promotion be understood, achieved and researched?
- Translating research for evidence-based public health: key concepts and future directions
- The effectiveness of health communication strategies in health education
- WHO Health Promotion Glossary: new terms
- Understanding Facilitators of and Barriers to Health Promotion Practice
- A systematic approach to the development and evaluation of an intervention promoting stair use
- Emotional health, value systems, stress and depression, aging and death, drug abuse, physical fitness, weight control, consumer health, and chronic and communicable diseases.
- Developing future leaders in local public health through innovation
- Health education and Contemporary health Promotion
- A model of health literacy
- Health Perspectives in Aging
- Environmental Health
- Disease Characteristics, Prevention, and Control
- First Aid and Safety Practices
- Fundamentals of Nutrition

### **Recommended Books:**

1. **Al-Qanoon Fil Tibb** Sheik-ul-Raees Bo Ali Sina Kuaja Rizwan Ahmed Idara taleefat
2. **Al-Akseer Volume I & II** by Hakeem Muhammad Kabeer Ud dine , nazim-e-dafter al maseeh , Qarol Bagh, Delhi 1945.
3. **Matab wa nuskha Nawasi** by Hakeem Muhammad Ayub Saddiqui. Mata Saddiqui Pak gait Multan city, 1984.
4. **Mualjat Volume I to IV** by Hakeem Wseem Ahmed Azmi. Iedara tamer e Tibb , Gazne street urdu bazaar Lahore1990 .
5. **Matab Ajmal** by Shams ul Ataba Al haj Hakeem Ghulam nabi MA, Maktabae Danyal 1986.
6. **Sharah-e-Asbab I & II** by Hakeem Muhammad Kabeer Ud dine , nazim-e-dafter al maseeh , Qarol Bagh, Delhi 1945.
7. **Haziq** by Hakeem Hafiz Muhammad Ajmal Khan Shaikh Basher and sons Urdu bazaar Lahore.
8. **The Brain Primer, 2002 The Society for Neurosciences, Brain Facts.**, Editors: Joseph
9. Carey, Senior Director, Communications & Public Affairs Sciences writer: Leah Ariniello, Researcher: Mary McComb, Printed and bound in China by Everest Printing Company, Fourth edition , 2002
10. **Clinical Neurology 5<sup>th</sup> edition 2002:** by David A. Greenberg, Michael J. Aminoff, Roger P. Simon by McGraw-Hill/Appleton & Lange
11. **Clinical Trials in the Neurosciences**, Volume Editors, K.M. woodbury-Harris Edmond, Oregon, B.M. Coull Tucson, Ariz, 2009, Karger, London

12. **Color Atlas of Neurosciences, Neuronatomy and Neurophysiology**  
Ben Greenstein, Ph. D, Greenstein, BSc (Hons) Mb, ChB, Thieme, Stuttgartm 2000
13. **Cellular and Molecular Methods in Neurosciences Research,**  
Adalberto Merighi, Giorgio Carmignoto Editors, 2002, Springer-Verlag New York, Inc.
14. **Neurological Foundation of Neuocognitive Science,** Jordan Grafman, series editor, D'Esposito, editor, 2003, Patients-Based Approaches to Cognitive Neuroscience MarthaJ. Farah and Todd E. Feinberg, editors,

**Internal Medicine (BATNI TIBB)  
PhD Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
IMD1	111	*Advance Studies in Principles of Medicine	100	2+1
IMD3	112	Advance concepts in Respiratory disorders	100	3
IMD5	113	Advance concepts in Gastrointestinal disorders	100	3
IMD7	114	Advance concepts in Immunology	100	3
IMD9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
IMD2	121	* Computer Applications in Health Education	100	3
IMD4	122	Advance concepts in CVS disorders	100	3
IMD6	123	Advance concepts in UGS disorders	100	3
IMD8	124	Endocrinology	100	3
IMD10	125	*Designing Clinical Research	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06

**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

**IMD1-111 \*Advance Studies in Principles of Medicine – Theory  
Semester-I (Credit Hours 2+1)**

1. Humours – nature, types and classification
2. Disruption of temperament related to organs, age and sex
3. Organs, nature and variety (bones, muscles, nerves, arteries and veins)
4. Faculties and functions
5. Concept of Disorders in Unani Medicine.
6. Classification of maltemperament and their production in human body.
7. Management of maltemperament according to different types of maltemperament their principles of management.
8. Basic points to evaluate temperament.
9. Qualitative of Quantitative aspect of humours.
10. Specific ratio of humours in body and disturbance in this ratio.
11. Role of six essential causes in preservation of health.

**Practical:**

1. Temperament evaluation
2. Management of seasonal abnormalities
3. Management of temperamental abnormalities
4. General regimen for diseases

**IMD3-112 Advance concepts in Respiratory disorders – Theory  
Semester-I (Credit Hours 3)**

RESPIRATORY DISEASE	أمراض الجهاز التنفسي
CLINICAL EXAMINATION	الفحص السريري
FUNCTIONAL ANATOMY AND PHYSIOLOGY	التشريح الوظيفي والفيزيولوجيا
INVESTIGATION	التحقيق
PRESENTING PROBLEM IN RESPIRATORY DISEASE	عرض مشكلة في أمراض الجهاز التنفسي
1)COUGH	كحة
2)BREATHLESSNESS	ضيق التنفس
CHRONIC EXTERNAL BREATHLESSNESS	التنفس الخارجي المزمنة
ACUTE SEVER BREATHLESSNESS	ضيق التنفس الحاد سيرفيه
3)CHEST PAIN	ألم في الصدر
4) HOMEOPLASIA	تنسج مثلي
5)INCIDENTAL PULMONARY NODULE ON IMAGING	العقيدات الرئوية عرضية على التصوير
6)PLEURAL EFFUSION	الانصباب الجنبي
7)RESPIRATORY FAILURE	توقف التنفس
MANAGEMENT OF ACUTE RESPIRATORY FAILURE	فشل الجهاز التنفسي الحادة إدارة
CHRONIC AND ACUTE ON CHRONIC TYPE 2 RESPIRATORY FAILURE	المزمنة والحادة على نوع المزمنة 2 التنفسي الفشل
HOME VENTILATION FOR CHRONIC RESPIRATORY FAILURE	التهوية المنزلية من أجل الفشل التنفسي المزمنة

LUNG TRANSPLANTATION  
TROPICAL PULMONARY ESONIPHILLA  
WEGENER'S GRANULOMATOSIS  
GOODAPATURE'S SYNDROME  
6)LUNG DISEASE DUE TO IRRADATION AND  
DRUGS  
RADIOTHERAPY  
DRUGS  
7)RARE INTERSTINAL LUNG DISEASE

زراعة الرئة  
فرط الحمضات الرئوية الاستوائية  
حبيبي فيجنر  
متلازمة غود باستشار  
أمراض الرئة بسبب الإشعاع  
والأدوية  
المعالجة بالإشعاع  
أدوية  
نادر أمراض الرئة الخلالي

OBSTRUCTIVE PULMOANARY DISEASE

مرض الانسداد الرئوي

1)ASTHAMA  
OCCUPATIONAL ASTHAMA

الربو

الربو المهني

Berylliosis

التسمم بالبريليوم

2)CHRONIC OBSTRUCTIVE PULMONARY  
DISEASE (COPD)

مرض الانسداد الرئوي المزمن

3) BRONCHIECTASIS

توسع القصبات

4)CYSTIC FEBRIOSIS

التليف الكيسي

INFECTION OF RESPIRATORY SYSTEM

إصابة الجهاز التنفسي

1)UPPER RESPIRATORY TRACT INFECTION

الجهاز التنفسي العلوي الالتهابات

2)PNEUMONIA

الالتهاب الرئوي

COMMUNITY-ACQUIRED PNEUMONIA (CAP)

المجتمع المكتسبة الالتهاب الرئوي

HOSPITAL-ACQUIRED PNEUMONIA (HAP)

مستشفى المكتسبة الالتهاب الرئوي

SUPPURATIVE PNEUMOINA AND PULMONARY

ABSCCESS

القيحي الالتهاب الرئوي والرئة خراج

PNEUMONIA IN IMMUNOCOMPROMISED

PATIENT

الالتهاب الرئوي في المرضى المناعة

3) TUBERCULOSIS

السل

OPPERTUNISTIC MYOCOBACTERIAL INFECTION

الالتهابات الفطرية الانتهازية

4)RESPIRATORY DISEASE CAUSED BY FUNGI

أمراض الجهاز التنفسي التي تسببها

OTHER FUNGI INFECTION

الفطريات

5)PRIMARY TUMOUR OF LUNG

عدوى فطرية أخرى

6)SECONDARY TUMOUR OF LUNG

الأورام الأولية للرئة

LYMPHATIC SPREAD OF CARCINOMA IN LUNG

ورم الرئة الثانوية

7)TUMOUR OF MEDIASTINUM

الإنتشار اللمفاوية سرطان في الرئة

INTERSTITIAL AND INFILTRATE PULMONARY  
DISEASE

أورام المنصف

1)DIFFUSE PARENCHYMAL LUNG DISEASE

الخلالي وتسلل مرض الرئة

IDIOPATHIC INTERSTITIAL PNEUMONIA

المنتشر متني أمراض الرئة

IDIOPATHIC PULMONARY FIBROSIS

مجهول السبب المعوية الالتهاب

NONSPECIFIC INTERSTITIAL PNEUMONIA

الرئوي

SARCOIDOSIS

التليف الرئوي مجهول السبب

2)LUNG DISEASE DUE TO ORGANIC DUSTS

الالتهاب الرئوي الخلالي غير محدد

HYPERSENSITIVITY PNEUMONIA (HP)

السااركويد

INHILATION (HUMIDIFER) FEVER

أمراض الرئة بسبب الأغبرة العضوية

فرط الحساسية الالتهاب الرئوي

الاستنشاق (مرطب) حمى

3) LUNG DISEASE DUE TO INORGANIC DUSTS  
SILICOSIS

ASBESTOSIS  
BERYLLIOSIS

4) LUNG DISEASE DUE TO SYSTEMIC  
INFLAMMATORY DISEASE

ACUTE RESPIRATORY DISTRESS SYNDROME  
RESPIRATORY INVOLVEMENT IN CONNECTIVE  
TISSUE DISORDER

5) PULMONARY EOSINOPHILIA AND VASCULITIS

ACUTE EOSINOPHILIC PNEUMONIA  
CHRONIC EOSINOPHILIC PNEUMONIA

6) LUNG DISEASE DUE TO RADIATION AND  
DRUGS

RARE INTERSTITIAL LUNG DISEASE  
PULMONARY VASCULAR DISEASE

1) VENOUS THROMBOEMBOLISM (VTE)  
2) PULMONARY HYPERTENSION

DISEASE OF UPPER AIRWAY

1) DISEASE OF NASOPHARYNX

ALLERGIC RHINITIS

SLEEP-DISORDERED BREATHING

THE SLEEP APNEA / HYPOPNEA SYNDROME

LARYNGEAL DISORDERS

CHRONIC LARYNGITIS

LARYNGEAL PARALYSIS

PSYCHOGENIC HOARSENESS AND APHONIA

LARYNGEAL OBSTRUCTION

3) TRACHEAL DISORDER

ACUTE TRACHEITIS

TRACHEAL OBSTRUCTION

TRACHEO-OESOPHAGEAL FISTULA

DISEASE OF PLEURA, DIAPHRAGM AND CHEST  
WALL

1) DISEASE OF PLEURA

PLEURISY

SPONTANEOUS PNEUMOTHORAX

2) DISEASE OF DIAPHRAGM

CONGENITAL DISORDER

ACQUIRED DISORDER

3) DEFORMITIES OF CHEST WALL

THORACIC KYPHOSCOLIOSIS

أمراض الرئة بسبب الأغبرة غير  
عضوية

السحار

تليف

التسمم بالبريليوم

أمراض الرئة بسبب مرض التهاب  
النظامية

الحادة متلازمة الضائقة التنفسية

بإثراك التنفسي في اضطراب النسيج  
الضام

فرط الحمضات أمراض الرئة

والتهاب الأوعية الدموية

الالتهاب الرئوي الحاد

الالتهاب الرئوي المزمن

أمراض الرئة بسبب الإشعاع

والأدوية

نادر أمراض الرئة الخلالي

الرئوية الوعائية المرض

الجلطات الدموية الوريدية

ارتفاع ضغط الدم الرئوي

مرض مجرى الهواء العلوي

مرض البلعوم الأنفي

حساسية الأنف

المختلين التنفس أثناء النوم-

متلازمة توقف التنفس أثناء النوم /

ضعف التنفس

اضطرابات الحنجرة

التهاب الحنجرة المزمنة

الحنجرة الشلل

نفسية بحة في الصوت وفقد الصوت

انسداد الحنجرة

القصبية الهوائية اضطراب

القصبية الحاد

القصبية الهوائية انسداد

ناسور رغامي مريئي

مرض غشاء الجنب، والحجاب

الحاجز والصدر الجدار

مرض غشاء الجنب

ذات الجنب

استرواح الصدر التلقائي

مرض الحجاب الحاجز

اضطراب الخلقية

اضطراب يتملك

تشوهات جدار الصدر

الصدر جنف حدابي

## IMD5-113 Advance concepts in Gastrointestinal disorders – Theory

### Semester-I (Credit Hours 3)

#### 1) Presenting Complaints of Gastrointestinal Tract (الشكاوى من الجهاز الهضمي (المسالك

- X. Dysphagia (عسر البلع)
  - XI. Dyspepsia (سوء الهضم)
  - XII. Vomiting (قے)
  - XIII. Gastrointestinal bleeding (النزيف المعدي المعوي)
  - XIV. Diarrhea (الإسهال)
  - XV. Malabsorption (سوء الامتصاص)
  - XVI. Weight loss (تخسس الوزن)
  - XVII. Constipation (قيض)
  - XVIII. Abdominal Pain (ألم في البطن)
- 2) Disease of mouth and salivary gland (أمراض الفم والغدد اللعابية)
- 3) Disease of Esophagus (امراض المريء)
- II. Gastro-esophageal reflux disease (ارتداد المرض المعدي)
- 4) Motility disorder (اضطراب حركية)
- 5) Tumours of esophagus (أورام المريء)
- 6) Disease of Stomach and Duodenum (مرض المعدة والاثني عشر)
- 7) Disease of small intestine (مرض من الأمعاء صغير)
- 8) Motility disorder of small intestine (اضطراب الحركة من الأمعاء صغير)
- 9) Miscellaneous disorder of small intestine (اضطراب متنوعة من الأمعاء صغير)
- 10) Adverse food reaction (رد فعل الغذائية الضارة)
- 11) Infection of small intestine (العدوى من الأمعاء صغير)
- 12) Tumours of small intestine (أورام / سلع الأمعاء صغير)
- 13) Disease of Pancreas (امراض بانقراس)
- 14) Inflammatory bowel disease (مرض التهاب الأمعاء)
- 15) Irritable bowel syndrome (متلازمة القولون المتهيج)
- 16) Anorectal disease (مرض الشرجية)

## IMD7-114 Advance concepts in Immunology – Theory

### Semester-I (Credit Hours 3)

**Immunology** (علم جهاز المناعى) Introduction of Immunity and hyper sensitivity, Antigen, Antibodies, Immunoglobulin, Antigen and Antibody Re-action and their clinical and diagnostic applications, The compliment system, Structure and function of Immune System ( $\beta$  cell and T Cell development), Major Histocompatibility Complex and transplantaion.

## IMD9-115 \*Biostatistics – Theory

### Semester-I (Credit Hours 3)

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

### **Recommended Books:**

#### **Biostatistics**

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3<sup>rd</sup> 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.
5. Burhan Uddin Nafis, Translated Hakim Mohammad Kabiruddin, Sharaha-e-Asbab, Vol 4<sup>th</sup>, Shokat Book Depot, Gujrat (1984).
6. Burhan Uddin Nafis, Translated Khawaja Rizwan Ahmed, Sharaha-e-Asbab Darul Talifat, Karachi (1990).
7. Hakim Mohammad Ajmal Khan, Haziq, Shokat Book Depot, Gujrat (1990).
8. Hakim Muhammed Said, Tajrubate Tabib, Hamdard Foundation, Karachi (1990).
9. Hakim Abdul Hameed, Marajal Baehrain, Shaikh Gulam and Sons, Lahore Vol 1-3, (1185).
10. Hakim Muhammad Azam Khan, Al- Akaseer (Translated), Alshifa, Faisalabad (1990).
11. Hakim Ghulam Jilani, Makhzanul Hikmat, Tibbi Kutub Khana, Lahore (1985).
12. Hakin Muhammad Hassan Qarshi, Jamaul Hikmat, Makatb Mushir ul Attabba, Lahore (1986).
13. Bu Ali Seena, Translated Hakim Kabir Uddin, Al-Qanoon, Mallick Sons, Faisalabad (1991).
14. C.R.W. Edward, and I.A.D. Boucher:Eds, Davidsons Practice of Medicine,,BPC Publisher, London (1990)

## SECOND SEMESTER

### **IMD2-121 \*Computer Applications in Health Education – Theory Semester-II (Credit Hours 3)**

- Introduction to computer application, knowledge regarding system parts and their uses.
- Importance of Microsoft Office.
- Computer virus.
- Strategies for the promotion of computer applications in healthcare delivery.
- Introduction of SPSS
- Date types
- Complete statistical analysis
- Reference writing: Endnote software
- Ethical issues
- Plagiarism software
- Computerized Systems for Health Professionals- Focuses upon skills and knowledge required of a professional in health sciences. Application of computers to gather, organize, and distribute health resources; apply computer assisted communication techniques and computer applications in data collection, analysis, and reporting in the health sciences.
- Biomedical Data: Their Acquisition, Storage, and Use.-
- Biomedical Decision Making: Probabilistic Clinical Reasoning.- Cognitive Science and
- Biomedical Informatics.- Computer Architectures for Health Care and Biomedicine.
- Evaluation of Biomedical and Health Information Resources.- Electronic Health Record Systems.- The Health Information Infrastructure.-
- Management of Information in Health Care Organizations.- Patient-Centered Care Systems.-
- Public Health Informatics.- Consumer Health Informatics and Personal Health Records.- Telehealth.- Patient Monitoring Systems.- Imaging Systems in Radiology.- Information Retrieval and Digital Libraries.- Clinical Decision-Support Systems.-
- Computers in Health Care Education.- Bioinformatics.- Translational Bioinformatics.- Clinical Research Informatics.- Health Information Technology Policy.- The Future of Informatics in Biomedicine.
- Applications of Computers in Health Care Delivery: An Overview
- Clinical laboratory and radiology, assisting in technology development (computer languages, software, and hardware),
- Enhancing the management of specific conditions such as HIV infection, and supporting health data coding and standards initiatives

## Recommended Books:

1. Matthew JZ, A Student guide to the statistical package for the Social Sciences ®, 2001, <http://www.amazon.com/The-SPSS%C2%AE-Book-Statistical-Sciences%C2%AE/dp/059518913X>.
2. Andy F, Discovering Statistics Using SPSS, 2007, [http://books.google.com.pk/books/about/Discovering\\_Statistics\\_Using\\_SPS\\_S.html?id=5253SAL5nDgC&redir\\_esc=y](http://books.google.com.pk/books/about/Discovering_Statistics_Using_SPS_S.html?id=5253SAL5nDgC&redir_esc=y).
3. SPSS Manuals  
[http://www.unt.edu/rss/class/Jon/SPSS\\_SC/Manuals/SPSS\\_Manuals.htm](http://www.unt.edu/rss/class/Jon/SPSS_SC/Manuals/SPSS_Manuals.htm)
4. Lawrence M. F, Medical informatics: Computer Applications in Health Care and Biomedicine (Health Informatics), 2<sup>nd</sup> Edition, Springer Publication 2011, [http://www.goodreads.com/book/show/1505743.Medical\\_Informatics](http://www.goodreads.com/book/show/1505743.Medical_Informatics).
5. Edward H. S, Leslie E. P, Medical informatics: Computer Applications in Health Care and Biomedicine, Springer, 2001-Computers-854 pages, [http://books.google.com.pk/books/about/Medical\\_informatics.html?id=PjFrAAAMAAJ&redir\\_esc=y](http://books.google.com.pk/books/about/Medical_informatics.html?id=PjFrAAAMAAJ&redir_esc=y)

## IMD4-122 Advance concepts in CVS disorders – Theory Semester-II (Credit Hours 3)

CLINICAL INVESTIGATION FUNCTIONAL,PHYSIOLOGY AND ANATOMY INVESTIGATION THERAPEUTIC PROCEDURE	التحقيقات السريرية وظيفية، وظائف الأعضاء والتشريح التحقيق الإجراء العلاجي
PRESENTING PROBLEMS IN CARDIO-VASCULAR DISEASE 1) CHEST PAIN 2) BREATHLESSNESS (DYSPONEA) ACUTE LEFT HEART FAILURE CHRONIC HEART FAILURE ARTHYMIA	تثيرة من مشاكل في القلب والأوعية الدموية الأمراض ألم في الصدر ألم في الصدر الحادة فشل القلب
ANGINAL EQUIVALENT 3) ACUTE CIRCULATORY FAILURE (CARDIOGENIC SHOCK) ACUTE MASSIVE PULMONARY EMBOLISM CARDIAE TANPONADE VALVULAR DISEASE MANAGMENT OF SHOCK	ما يعادل ذبحي فشل في الدورة الدموية الحاد الانسداد الرئوي الحاد شعبي أمراض صمامات إدارة ال صدمة فشل القلب
4) HEART FAILURE MANAGMENT OF ACUTE PULMONARY OEDEMA MANAGMENT OF CHRONIC HEART FAILURE	البحث الإدارة الرئوية الحادة ذمة البحث الإدارة المزمنة فشل القلب
5) HYPERTENSION APPROACH TO NEWLY DIAGNOSED HYPERTENSION	ارتفاع ضغط الدم نهج لتشخيصها حديثا ارتفاع ضغط الدم
6) SYNSCOPE AND PYRESNCOPE DIFFERENTIAL DIAGNOSIS	التشخيص التفريقي

- 7) PALPITATION  
 8) CARDIAC ARREST AND SUDDEN CARDIAC DEATH  
 9) ABNORMAL HEART SOUND AND MURMURS

خفقان

توقف القلب والموت المفاجئ القلب  
 صوت القلب غير طبيعي والدندنة

DISORDER OF HEART RATE, RHYTHM AND CONDUCTION

اضطراب في دقات القلب، وإيقاع والتوصيل الإيقاع

- 1) SINUS RHYTHM  
 SINUS ARRHYTHMA  
 SINUS BRADYCARDIA  
 SINUS TACHYCARDIA

بطء القلب الحبيبي

- 2) SINUS TACHYARRHYTHMIAE  
 ATRIAL ECTOPIC BEATS (EXTRA SYSTOLES, PREMATURE BEATS)  
 ATRIAL TACHYCARDIA  
 ATRIAL FLUTTER  
 ATRIAL FIBRILLATION

الرجفان الأذيني

الرجفان الأذيني

التهوية عدم انتظام دقات القلب الأذينية البطينية ولف باركنسون ومتلازمة الأذينية البطينية

- 3) SUPRA VENTRICULAR TACHYCARDIA  
 ATRIOVENTRICULAR NODAL RE-ENTRANT TACHYCARDIA (AVRT)  
 WOLFF-PARKINSON-WHITE SYNDROME AND ATRIOVENTRICULAR RE-ENTRANT TACHYCARDIA  
 WHITE AND RE-ENTRANT TACHYCARDIA

تسرع القلب البطيني

- 4) VENTRICULAR TACHYCARDIA  
 VENTRICULAR ECTOPIC BEATS (EXTRA SYSTOLES, PREMATURE BEATS)  
 VENTRICULAR TACHYCARDIA

نبض البطين خارج الرحم  
 تسرع القلب البطيني

- 5) ATRIOVENTRICULAR AND BUNDLE BRANCH BLOCK

الأذينية البطينية وربطة فرع كتلة

BUNDLE BRANCH BLOCK AND HEMIBLOCK

حزمت فرع منع وصول و إحصار شقي

- 6) ANTI-ARRHYTHMIC DRUG THERAPY  
 THE CLASSIFICATION OF ANTI-ARRHYTHMIC DRUG

ارتفاع معدل ضربات القلب

المخدرات العلاج

- 7) THERAPEUTIC PROCEDURE  
 EXTERNAL DEFIBRILLATION AND CARDIOVERSION  
 CATHETER ABLATION

تصنيف المخدرات ارتفاع معدل ضربات القلب

الإجراء العلاجي

- TEMPORARY PACEMAKER  
 IMPLANTABLE CARDIAC DEFIBRILLATION (ICD)  
 CARDIAC RESYNCHRONISATION THERAPY (CRT)

إزالة الرجفان الخارجي وتقويم نظم القلب

اجتثاث القطنرة

جهاز تنظيم ضربات القلب المؤقتة

زرع القلبية المداولة

العلاج القلب إعادة تزامن

## ATHEROSCLEROSIS

تصلب الشرايين

## CORONARY HEART DISEASE

أمراض القلب التاجية

### 1) STABLE ANGINA

الذبحة المستقرة

ANGINA WITH NORMAL CORONARY ARTEREIS

الذبحة الصدرية مع الشرايين التاجية عادي

### 2) ACUTE CORONARY SYNDROME

متلازمة الشريان التاجي الحادة

IMMEDIATE MANAGEMENT (1<sup>ST</sup> 12 HRS)

إدارة الفوري

COMPLICATION OF ACUTE CORONARY SYNDROME

مضاعفات متلازمة الشريان التاجي الحادة

LATER IN HOSPITAL MANAGEMENT

في وقت لاحق إدارة المستشفيات

### 3) CARDIAE RISK OF NON CARDIAC SURGRY

الخطر على القلب من غير جراحة القلب

## VASCULAR DISEASE

أمراض الأوعية الدموية

### 1) PERIPHERAL ARTIAL DISEASE

مرض الشرايين الطرفية

## CHRONIC LOWER LIMB ARTERIAL DISEASE

الطرف السفلي المزمنة مرض الشرياني

CHRONIC UPPER LIMB ARTERIAL DISEASE

الطرف العلوي المزمنة مرض الشرياني

RAYNAUD'S PHENOMENA AND RAYNAUD'S

DISEASE

ارينود الظواهر ومرض رينود

ACUTE LIMB ISCHEMIA

نقص التروية الحادة

CEREBROVASCULAR DISEASE , RENOVASCULAR DISEASE AND ISCHEMIC GUT INJURY

الدماعية مرض، الكلوية المرض والإصابة الدماغية القز

### 2) DISEASE OF AORTA

مرض الشريان الأبهر

AORTIC ANEURYSM

الأبهر

AORTIC DISSECTION

تسلخ الأبهر

### 3)RHEUMATIC HEART DISEASE

أمراض القلب الروماتيزمية

ACUTE RHEUMATIC FEVER

الحمى الروماتيزمية الحادة

CHRONIC RHEUMATIC HEART DISEASE

الروماتيزمية المزمنة أمراض القلب

### 4) MITRAL VALVE DISEASE

مرض الصمام التاجي

MITRAL STENOSIS

تضييق تاجي

MITRAL REGURGITATION

قلس التاجي

### 5) AORTIC VALVE DISEASE

مرض الصمام الأبهر

AORTIC STENOSIS

تضييق الأبهر

AORTIC REGURGITATION

قلس الأبهر

### 6) TRICUSPID VALVE

ثلاثي الشرفات صمام

TRICUSPID STENOSIS

تضييق الثلاثي الشرف

TRICUSPID REGURGITATION

قلس الثلاثي الشرف

### 7) PULMONARY VAVLE DISEASE

صمام الرئوية المرض

PULMONARY STENOSIS

تضييق رئوي أو تضييق

PULMONARY REGURGITATION

قلس الرئوية

### 8) INFECTION

الالتهابات

### 9) VALVE REPLACEMENT SURGERY

استبدال صمام جراحة

CONGENITAL HEART DISEASE	أمراض القلب الخلقية
PERSISTENT DUCTUS ARTERIOSUS	الثابتة القناة الشريانية
COARCTATION	تضيق
ATRIAL SEPTAL DEFECT	عيوب الحاجز الأذيني
VENTRICULAR SEPTAL DEFECT	الصراف الصحي البطين فشل
TETRALOGY OF FALLOT	رباعية فالو
OTHER CAUSES OF CYANOSTIC CONGENITAL HEART DISEASE	الأسباب الأخرى للمزركة أمراض القلب الخلقية
ADULT CONGENITAL HEART DISEASE	البالغ أمراض القلب الخلقية
DISEASE OF THE MYOCARDIUM	مرض عضلة القلب
1)MYOCARDITIS	إلتهاب العضلة القلبية
2)CARDIOMYOPATHY	اعتلال عضلة القلب
DILATED CARDIOMYOPATHY	تمدد عضلة القلب
HYPERTROPIC CARDIOMYOPATHY	اعتلال عضلة القلب الضخامي
ARRTHYMOGENIC RIGHT VENTRICULAR	محدث اضطراب النظم البطين الأيمن
CARDIO MYOPATHY	اعتلال عضلة القلب
OBLITERATIVE CARDIOMYOPATHY	اعتلال عضلة القلب مسد
RESTRICTIVE CARDIOMYOPATHY	اعتلال عضلة القلب التقييدية
3) SPECIFIC DISEASE OF HEART MUSCLE	مرض معين من عضلة القلب
4)CARDIAE TUMOR	ورم القلبية
DISEASE OF PERICARDIUM	مرض التأمور
ACUTE PERICARDITIS	التهاب التأمور الحاد
PERICARDIAL EFFUSION	انصباب التأمور
TUBERCULOSIS PERICARDITIS	السل التهاب التأمور
CHRONIC CONSTRICTIVE PERICARDITIS	التهاب التأمور التضيقية المزمنة

### Recommended Books:

1. Burhan Uddin Nafis, Translated Hakim Mohammad Kabiruddin, Sharaha-e-Asbab, Vol 4<sup>th</sup>, 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).

### **IMD6-123 Advance concepts in UGS disorders – Theory Semester-II (Credit Hours 3)**

#### **Renal diseases**

**Presenting problems in men**(تقديم مشاكل لدى الرجال)

Urethral discharge(التفريغ ا مجرى البول)

Genital itch and rash(حكة الأعضاء التناسلية والطفح الجلدي)

Genital ulceration (تقرح الأعضاء التناسلية)

Genital lump(مقطوع الأعضاء التناسلية)

Proctitis (التهاب المستقيم)

#### **Sexually transmitted bacterial infection**

Syphilis(آت شك)

Gonorrhoea(سوزاك)

**Sexually transmitted viral infection** (المنقولة جنسيا عدوى فيروسية)

### **IMD8-124 Endocrinology – Theory Semester-II (Credit Hours 3)**

- Chemical classes of hormones
  - Amines
  - Peptide and protein
  - Steroid
- History and key discoveries of endocrinology
- Endocrinology as a profession
  - Work
  - Training
  - Professional organizations
- Patient education
- Diseases

#### **Adrenal Gland**

- Addison Disease
- Adrenal Carcinoma
- Adrenal Crisis
- Adrenal Crisis in Emergency Medicine
- Adrenal Disease and Pregnancy
- Adrenal Hemorrhage
- Adrenal Incidentaloma

#### **Diabetes Mellitus**

- Blood Glucose Monitors
- Bullous Disease of Diabetes
- Diabetes Mellitus and Pregnancy
- Diabetic Foot Infections
- Diabetic Ketoacidosis
- Diabetic Neuropathy



- Diabetic Retinopathy
- Diabetic Ulcers
- Glucose Intolerance
- Hypoglycemia
- Infection in Patients With Diabetes Mellitus
- Insulinoma
- Ketosis-Prone Type 2 Diabetes
- Nutrition in Patients With Diabetes
- Pediatric Diabetic Ketoacidosis
- Pseudohypoglycemia
- Somogyi Phenomenon
- Type 1 Diabetes Mellitus
- Type 2 Diabetes Mellitus

### **Gonads**

- Amenorrhea
- Anabolic Steroid Use and Abuse
- Androgen Excess
- Androgenetic Alopecia
- Anovulation
- Dysfunctional Uterine Bleeding
- Fallopian Tube Reconstruction
- Follicle-Stimulating Hormone Abnormalities
- Gonadotropin-Releasing Hormone Deficiency in Adults
- Gynecomastia
- Hirsutism
- Luteal Phase Dysfunction
- Luteinizing Hormone Deficiency
- Ovarian Insufficiency
- Ovotesticular Disorder of Sexual Development

### **Metabolic Bone Disease**

- Bone Markers in Osteoporosis
- Osteopetrosis
- Osteoporosis in Solid Organ Transplantation

### **Metabolic Disorders**

- Acquired Partial Lipodystrophy
- Alcoholic Ketoacidosis
- Beriberi (Thiamine Deficiency)
- Calcinosis Cutis
- Calciphylaxis
- Carotenemia
- Cholesterol Embolism
- Cyclooxygenase Deficiency
- Diseases of Tetrapyrrole Metabolism - Refsum Disease and the Hepatic Porphyrrias
- Familial Hypercholesterolemia
- Generalized Lipodystrophy
- Glucose-6-Phosphatase Deficiency

- High HDL Cholesterol (Hyperalphalipoproteinemia)
- Hyperglucagonemia
- Hyperglycemia and Hypoglycemia in Stroke
- Hypertriglyceridemia
- Inborn Errors of Metabolism
- Insulin Resistance
- Lecithin-Cholesterol Acyltransferase Deficiency
- Localized Lipodystrophy
- Low HDL Cholesterol (Hypoalphalipoproteinemia)
- Low LDL Cholesterol (Hypobetalipoproteinemia)
- Methylmalonic Acidemia
- Necrobiosis Lipoidica
- Neonatal Hypoglycemia
- Obesity
- Ochronosis
- Osteoma Cutis
- Polygenic Hypercholesterolemia
- Porphyria Cutanea Tarda
- Pretibial Myxedema
- Propionic Acidemia
- Protein-Energy Malnutrition
- Pyridoxine Deficiency
- Pyruvate Carboxylase Deficiency
- Pyruvate Kinase Deficiency
- Respiratory Acidosis
- Respiratory Alkalosis
- Riboflavin Deficiency
- Scurvy
- Type Ia Glycogen Storage Disease
- Type Ib Glycogen Storage Disease
- Type II Glycogen Storage Disease (Pompe Disease)
- Type III Glycogen Storage Disease
- Type IV Glycogen Storage Disease
- Type V Glycogen Storage Disease
- Type VI Glycogen Storage Disease
- Type VII Glycogen Storage Disease
- Vitamin A Deficiency
- Vitamin D Deficiency and Related Disorders
- Vitamin E Deficiency
- Vitamin K Deficiency

### **Miscellaneous Topics in Endocrinology**

- Endocannabinoids

### **Multiple Endocrine Disease and Miscellaneous Endocrine Disease**

- Endocrine Myopathies
- Exocrine Pancreatic Insufficiency
- Glucagonoma
- Hypercalcemia

- Hyperchloremic Acidosis
- Hyperkalemia
- Hypermagnesemia in Emergency Medicine
- Hyponatremia
- Hyperosmolar Hyperglycemic State
- Hyperphosphatemia
- Hyperuricemia
- Hypoalbuminemia
- Hypocalcemia
- Hypokalemia
- Hyponatremia
- Hypophosphatemia
- Hyporeninemic Hypoaldosteronism
- Lactic Acidosis
- Lichen Amyloidosis
- Macular Amyloidosis
- McCune-Albright Syndrome
- Multiple Endocrine Neoplasia Type 1
- Neoplasms of the Endocrine Pancreas
- Nodular Localized Cutaneous Amyloidosis
- Type 2 Multiple Endocrine Neoplasia
- Type I Polyglandular Autoimmune Syndrome
- Type II Polyglandular Autoimmune Syndrome
- Type III Polyglandular Autoimmune Syndrome
- VIPomas
- Wermer Syndrome (MEN Type 1)

### **Parathyroid Gland**

- Hyperparathyroidism
- Hypoparathyroidism
- Milk-Alkali Syndrome
- Parathyroid Carcinoma
- Pseudohypoparathyroidism

### **Pituitary Gland**

- Diabetes Insipidus
- Growth Hormone Deficiency
- Growth Hormone Replacement in Older Men
- Hyperprolactinemia
- Hypopituitarism (Panhypopituitarism)
- Kallmann Syndrome and Idiopathic Hypogonadotropic Hypogonadism
- Nasal and Sublabial Approaches to the Pituitary
- Pituitary Apoplexy
- Pituitary Disease and Pregnancy
- Pituitary Macroadenomas
- Pituitary Microadenomas
- Prolactin Deficiency
- Prolactinoma

## **Thyroid**

- Anaplastic Thyroid Carcinoma
- Autoimmune Thyroid Disease and Pregnancy
- Diffuse Toxic Goiter
- Euthyroid Hyperthyroxinemia
- Euthyroid Sick Syndrome
- Follicular Thyroid Carcinoma
- Goiter
- Graves Disease
- Hashimoto Thyroiditis
- Hurthle Cell Carcinoma
- Hyperthyroidism
- Hyperthyroidism, Thyroid Storm, and Graves Disease
- Hypothyroidism
- Hypothyroidism and Myxedema Coma
- Iodine Deficiency
- Lithium-Induced Goiter
- Medullary Thyroid Carcinoma
- Myxedema Coma or Crisis
- Neurological Manifestations of Thyroid Disease
- Nontoxic Goiter
- Papillary Thyroid Carcinoma
- Riedel Thyroiditis
- Subacute Thyroiditis
- Substernal Thyroid Goiter
- Thyroid Dysfunction Induced by Amiodarone Therapy
- Thyroid Hormone Toxicity
- Thyroid Nodule
- Thyroid-Associated Orbitopathy
- Thyrotoxic Storm Following Thyroidectomy
- Thyroxine-Binding Globulin Deficiency
- Toxic Nodular Goiter

## **IMD10-125 \*Designing Clinical Research – Theory Semester-II (Credit Hours 3)**

### **Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

### **Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

### **Clinical studies**

- Randomized controlled trial

- Double-blind randomized trial
- Single-blind randomized trial
- Non-blind trial
- Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

### **Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study
- Case-control study
  - Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism
- Writing and funding a research proposal
- Writing methodology
- Ethical issues

# Biochemistry (HAYATI KIMYA)

## Ph.D. Program First Year

Course Code	Course No.	First Semester	Marks	Cr. Hr.
BIO1	111	*Advance Studies in Principles of Medicine	100	2+1
BIO3	112	Cell Biochemistry	100	3
BIO5	113	Protein Chemistry	100	3
BIO7	114	Enzymology	100	3
BIO9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
BIO2	121	* Computer Applications in Health Education	100	3
BIO4	122	*Designing Clinical Research	100	3
BIO6	123	Chemistry of Respiration	100	3
BIO8	124	Biochemistry of Liver & Kidney	100	3
BIO10	125	Endocrinology	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06

**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

### FIRST SEMESTER

#### **BIO1-111 \*Advance Studies in Principles of Medicine – Theory Semester-I (Credit Hours 2+1)**

1. Humours – nature, types and classification
2. Disruption of temperament related to organs, age and sex
3. Organs, nature and variety (bones, muscles, nerves, arteries and veins)
4. Faculties and functions
5. Concept of Disorders in Unani Medicine.
6. Classification of maltemperament and their production in human body.
7. Management of maltemperament according to different types of maltemperament their principles of management.
8. Basic points to evaluate temperament.
9. Qualitative of Quantitative aspect of humours.
10. Specific ratio of humours in body and disturbance in this ratio.
11. Role of six essential causes in preservation of health.

**Practical:**

1. Temperament evaluation
2. Management of seasonal abnormalities
3. Management of temperamental abnormalities
4. General regimen for diseases

**BIO3-112 Cell Biochemistry – Theory  
Semester-I (Credit Hours 3)**

Cells and water

Biochemistry

Cells

Water

Structural Biochemistry

Nucleic acids

Nucleic acid

RNA

DNA

Enzyme mechanisms

Enzyme catalysis

Enzyme kinetics

Enzyme kinetics

Lipids and membranes

Lipid

Biological membrane

Membrane protein

Cell membrane

Carbohydrate structure

Carbohydrate

Polysaccharide

Intermediary metabolism

Metabolism

Overview of metabolism

Carbohydrate metabolism

Glycolysis

Gluconeogenesis

Glycogen

Pentose phosphate pathway

Citric acid cycle

Citric acid cycle

Oxidative phosphorylation

Oxidative phosphorylation

Photosynthesis

Photosynthesis

Lipid metabolism

Fatty acid synthesis

Lipogenesis

- Acetyl-CoA carboxylase
- Fatty acid degradation
- Beta oxidation
- Nitrogen metabolism
  - Nitrogen fixation
  - Amino acid synthesis
  - Nucleotide
  - Urea cycle
- Integration of metabolism
  - Hormone
  - Signal transduction
  - Diabetes mellitus
- Informational Macromolecules
- DNA synthesis and repair
  - DNA replication
  - DNA repair
  - Oncogenes
- RNA synthesis and processing
  - Transcription
- Regulation of gene expression

### **BI05-113 Protein Chemistry – Theory**

#### **Semester-I (Credit Hours 3)**

- DNA-binding protein
- DNA, RNA and proteins: The three essential macromolecules of life
- Intein
- List of proteins
- Protein design
- Proteopathy
- Proteopedia
- Proteolysis
- Intrinsically disordered proteins

#### **Protein synthesis and modifications**

- Translation
- Posttranslational modification
- Glycosaminoglycans
- Proteolysis
- Proteasome

#### **Proteins and amino acids**

- Protein
- Amino acid
- Properties of the twenty amino acids
- Myoglobin
- Hemoglobin



## **BI07-114 Enzymology – Theory**

### **Semester-I (Credit Hours 3)**

- Etymology and history
- Structures and mechanisms
  - Specificity
    - "Lock and key" model
  - Mechanisms
    - Transition state stabilization
    - Dynamics and function
  - Allosteric modulation
- Cofactors and coenzymes
  - Cofactors
  - Coenzymes
- Thermodynamics
- Kinetics
- Inhibition
- Biological function
- Control of activity
- Involvement in disease

Classification of enzymes includes

1. hydrolases,
  1. carbohydrases,
  2. nucleases,
  3. amidases,
  4. purine deaminases,
  5. peptidases,
  6. proteinases,
  7. esterases,
  8. iron enzymes,
  9. copper enzymes,
  10. enzymes containing co-enzymes 1 and/or 2,
  11. yellow enzymes
2. hydrases,
3. mutases,
4. desmolases,
5. polysaccharide-synthesizing enzymes.

## **BI09-115 \*Biostatistics – Theory**

### **Semester-I (Credit Hours 3)**

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

## **Recommended Books:**

### **Biostatistics:**

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3<sup>rd</sup> 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.
5. Burhan Uddin Nafis, Translated Hakim Mohammad Kabiruddin, **Sharaha-e-Asbab**, Vol 4<sup>th</sup>, Shokat Book Depot, Gujrat (1984).
6. Burhan Uddin Nafis, Translated Khawaja Rizwan Ahmed, **Sharaha-e-Asbab Darul Talifat**, Karachi (1990).
7. Hakim Mohammad Ajmal Khan, Hazique, Shokat Book Depot, Gujrat (1990).
8. Hakim Muhammed Said, **Tajrubate Tabib**, Hamdard Foundation, Karachi (1990).
9. Hakim Abdul Hameed, Marajal Baehrain, Shaikh Gulam and Sons, Lahore Vol 1-3, (1185).
10. Hakim Muhammad Azam Khan, **Al- Akaseer** (Translated), Alshifa, Faisalabad (1990).
11. Hakim Ghulam Jilani, **Makhzanul Hikmat**, Tibbi Kutub Khana, Lahore (1985).
12. Hakin Muhammad Hassan Qarshi, **Jamaul Hikmat**, Makatb Mushir ul Attabba, Lahore (1986).
13. Bu Ali Seena, Translated Hakim Kabir Uddin, **Al-Qanoon**, Mallick Sons, Faisalabad (1991).
14. C.R.W. Edward, and I.A.D. Boucher:Eds, **Davidsons Practice of Medicine**, BPC Publisher, London (1990)

## SECOND SEMESTER

### **BIO2-121 \*Computer Application in Health Education – Theory Semester-II (Credit Hours 3)**

- Introduction to computer application, knowledge regarding system parts and their uses.
- Importance of Microsoft Office.
- Computer virus.
- Strategies for the promotion of computer applications in healthcare delivery.
- Introduction of SPSS
- Date types
- Complete statistical analysis
- Reference writing: Endnote software
- Ethical issues
- Plagiarism software
- Computerized Systems for Health Professionals- Focuses upon skills and knowledge required of a professional in health sciences. Application of computers to gather, organize, and distribute health resources; apply computer assisted communication techniques and computer applications in data collection, analysis, and reporting in the health sciences.
- Biomedical Data: Their Acquisition, Storage, and Use.-
- Biomedical Decision Making: Probabilistic Clinical Reasoning.- Cognitive Science and
- Biomedical Informatics.- Computer Architectures for Health Care and Biomedicine.
- Evaluation of Biomedical and Health Information Resources.- Electronic Health Record Systems.- The Health Information Infrastructure.-
- Management of Information in Health Care Organizations.- Patient-Centered Care Systems.-
- Public Health Informatics.- Consumer Health Informatics and Personal Health Records.- Telehealth.- Patient Monitoring Systems.- Imaging Systems in Radiology.- Information Retrieval and Digital Libraries.- Clinical Decision-Support Systems.-
- Computers in Health Care Education.- Bioinformatics.- Translational Bioinformatics.- Clinical Research Informatics.- Health Information Technology Policy.- The Future of Informatics in Biomedicine.
- Applications of Computers in Health Care Delivery: An Overview
- Clinical laboratory and radiology, assisting in technology development (computer languages, software, and hardware),
- Enhancing the management of specific conditions such as HIV infection, and supporting health data coding and standards initiatives

## **Recommended Books:**

1. Matthew JZ, A Student guide to the statistical package for the Social Sciences ®, 2001, <http://www.amazon.com/The-SPSS%C2%AE-Book-Statistical-Sciences%C2%AE/dp/059518913X>.
2. Andy F, Discovering Statistics Using SPSS, 2007, [http://books.google.com.pk/books/about/Discovering\\_Statistics\\_Using\\_SPS\\_S.html?id=5253SAL5nDgC&redir\\_esc=y](http://books.google.com.pk/books/about/Discovering_Statistics_Using_SPS_S.html?id=5253SAL5nDgC&redir_esc=y).
3. SPSS Manuals  
[http://www.unt.edu/rss/class/Jon/SPSS\\_SC/Manuals/SPSS\\_Manuals.htm](http://www.unt.edu/rss/class/Jon/SPSS_SC/Manuals/SPSS_Manuals.htm)
4. Lawrence M. F, Medical informatics: Computer Applications in Health Care and Biomedicine (Health Informatics), 2<sup>nd</sup> Edition, Springer Publication 2011, [http://www.goodreads.com/book/show/1505743.Medical\\_Informatics](http://www.goodreads.com/book/show/1505743.Medical_Informatics).
5. Edward H. S, Leslie E. P, Medical informatics: Computer Applications in Health Care and Biomedicine, Springer, 2001-Computers-854 pages, [http://books.google.com.pk/books/about/Medical\\_informatics.html?id=PjFrAAAMAAJ&redir\\_esc=y](http://books.google.com.pk/books/about/Medical_informatics.html?id=PjFrAAAMAAJ&redir_esc=y)

## **BIO4-122 \*Designing Clinical Research – Theory Semester-II (Credit Hours 3)**

### **Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

### **Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

### **Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

### **Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study
- Case-control study

- Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism
- Writing and funding a research proposal
- Writing methodology
- Ethical issues

### **BIO6-123 Chemistry of Respiration – Theory Semester-II (Credit Hours 3)**

Respiration: Chemistry and Mechanics

Respiratory Chemistry: The Role of Carbon Dioxide in Oxygen Distribution

Deregulated Respiration: Effects of Carbon Dioxide Deficit on Physiology

Chronic Deregulation: Compensatory Behavioral-Physiologic Activity

Overbreathing: Effects on Health

Overbreathing: Effects on Cognition

Overbreathing: its Effects on Emotion

Overbreathing: Effects on Performance

Respiratory Training: General Considerations

Respiratory Training: Specific Considerations

Heart Rate Variability: the Breathing Heart Wave

Heart Rate Variability: Other Frequencies

### **BIO8-124 Biochemistry of Liver & Kidney – Theory Semester-II (Credit Hours 3)**

Biochemical markers of liver and kidney function

Transport of glutathione, as gamma-glutamylcysteinylglycyl ester, into liver and kidney

Biochemical role of biotin.

Biotin-mediated restoration of hepatic gluconeogenesis

## **BIO10-125 Endocrinology – Theory Semester-II (Credit Hours 3)**

### **ENDOCRINOLOGY:**

- Chemical classes of hormones
  - Amines
  - Peptide and protein
  - Steroid
- History and key discoveries of endocrinology
- Endocrinology as a profession
  - Work
  - Training
  - Professional organizations
- Patient education
- Diseases

#### **Adrenal Gland**

- Addison Disease
- Adrenal Carcinoma
- Adrenal Crisis
- Adrenal Crisis in Emergency Medicine
- Adrenal Disease and Pregnancy
- Adrenal Hemorrhage
- Adrenal Incidentaloma

#### **Diabetes Mellitus**

- Blood Glucose Monitors
- Bullous Disease of Diabetes
- Diabetes Mellitus and Pregnancy
- Diabetic Foot Infections
- Diabetic Ketoacidosis
- Diabetic Neuropathy
- Diabetic Retinopathy
- Diabetic Ulcers
- Glucose Intolerance
- Hypoglycemia
- Infection in Patients With Diabetes Mellitus
- Insulinoma
- Ketosis-Prone Type 2 Diabetes
- Nutrition in Patients With Diabetes
- Pediatric Diabetic Ketoacidosis
- Pseudohypoglycemia
- Somogyi Phenomenon
- Type 1 Diabetes Mellitus
- Type 2 Diabetes Mellitus

#### **Gonads**

- Amenorrhea
- Anabolic Steroid Use and Abuse
- Androgen Excess

- Androgenetic Alopecia
- Anovulation
- Dysfunctional Uterine Bleeding
- Fallopian Tube Reconstruction
- Follicle-Stimulating Hormone Abnormalities
- Gonadotropin-Releasing Hormone Deficiency in Adults
- Gynecomastia
- Hirsutism
- Luteal Phase Dysfunction
- Luteinizing Hormone Deficiency
- Ovarian Insufficiency
- Ovotesticular Disorder of Sexual Development

### **Metabolic Bone Disease**

- Bone Markers in Osteoporosis
- Osteopetrosis
- Osteoporosis in Solid Organ Transplantation

### **Metabolic Disorders**

- Acquired Partial Lipodystrophy
- Alcoholic Ketoacidosis
- Beriberi (Thiamine Deficiency)
- Calcinosis Cutis
- Calciphylaxis
- Carotenemia
- Cholesterol Embolism
- Cyclooxygenase Deficiency
- Diseases of Tetrapyrrole Metabolism - Refsum Disease and the Hepatic Porphyrins
- Familial Hypercholesterolemia
- Generalized Lipodystrophy
- Glucose-6-Phosphatase Deficiency
- High HDL Cholesterol (Hyperalphalipoproteinemia)
- Hyperglucagonemia
- Hyperglycemia and Hypoglycemia in Stroke
- Hypertriglyceridemia
- Inborn Errors of Metabolism
- Insulin Resistance
- Lecithin-Cholesterol Acyltransferase Deficiency
- Localized Lipodystrophy
- Low HDL Cholesterol (Hypoalphalipoproteinemia)
- Low LDL Cholesterol (Hypobetalipoproteinemia)
- Methylmalonic Acidemia
- Necrobiosis Lipoidica
- Neonatal Hypoglycemia
- Obesity
- Ochronosis
- Osteoma Cutis
- Polygenic Hypercholesterolemia



- Porphyria Cutanea Tarda
- Pretibial Myxedema
- Propionic Acidemia
- Protein-Energy Malnutrition
- Pyridoxine Deficiency
- Pyruvate Carboxylase Deficiency
- Pyruvate Kinase Deficiency
- Respiratory Acidosis
- Respiratory Alkalosis
- Riboflavin Deficiency
- Scurvy
- Type Ia Glycogen Storage Disease
- Type Ib Glycogen Storage Disease
- Type II Glycogen Storage Disease (Pompe Disease)
- Type III Glycogen Storage Disease
- Type IV Glycogen Storage Disease
- Type V Glycogen Storage Disease
- Type VI Glycogen Storage Disease
- Type VII Glycogen Storage Disease
- Vitamin A Deficiency
- Vitamin D Deficiency and Related Disorders
- Vitamin E Deficiency
- Vitamin K Deficiency

#### **Miscellaneous Topics in Endocrinology**

- Endocannabinoids

#### **Multiple Endocrine Disease and Miscellaneous Endocrine Disease**

- Endocrine Myopathies
- Exocrine Pancreatic Insufficiency
- Glucagonoma
- Hypercalcemia
- Hyperchloremic Acidosis
- Hyperkalemia
- Hypermagnesemia in Emergency Medicine
- Hyponatremia
- Hyperosmolar Hyperglycemic State
- Hyperphosphatemia
- Hyperuricemia
- Hypoalbuminemia
- Hypocalcemia
- Hypokalemia
- Hyponatremia
- Hypophosphatemia
- Hyporeninemic Hypoaldosteronism
- Lactic Acidosis
- Lichen Amyloidosis
- Macular Amyloidosis
- McCune-Albright Syndrome

- Multiple Endocrine Neoplasia Type 1
- Neoplasms of the Endocrine Pancreas
- Nodular Localized Cutaneous Amyloidosis
- Type 2 Multiple Endocrine Neoplasia
- Type I Polyglandular Autoimmune Syndrome
- Type II Polyglandular Autoimmune Syndrome
- Type III Polyglandular Autoimmune Syndrome
- VIPomas
- Wermer Syndrome (MEN Type 1)

### **Parathyroid Gland**

- Hyperparathyroidism
- Hypoparathyroidism
- Milk-Alkali Syndrome
- Parathyroid Carcinoma
- Pseudohypoparathyroidism

### **Pituitary Gland**

- Diabetes Insipidus
- Growth Hormone Deficiency
- Growth Hormone Replacement in Older Men
- Hyperprolactinemia
- Hypopituitarism (Panhypopituitarism)
- Kallmann Syndrome and Idiopathic Hypogonadotropic Hypogonadism
- Nasal and Sublabial Approaches to the Pituitary
- Pituitary Apoplexy
- Pituitary Disease and Pregnancy
- Pituitary Macroadenomas
- Pituitary Microadenomas
- Prolactin Deficiency
- Prolactinoma

### **Thyroid**

- Anaplastic Thyroid Carcinoma
- Autoimmune Thyroid Disease and Pregnancy
- Diffuse Toxic Goiter
- Euthyroid Hyperthyroxinemia
- Euthyroid Sick Syndrome
- Follicular Thyroid Carcinoma
- Goiter
- Graves Disease
- Hashimoto Thyroiditis
- Hurthle Cell Carcinoma
- Hyperthyroidism
- Hyperthyroidism, Thyroid Storm, and Graves Disease
- Hypothyroidism
- Hypothyroidism and Myxedema Coma
- Iodine Deficiency
- Lithium-Induced Goiter
- Medullary Thyroid Carcinoma

- Myxedema Coma or Crisis
- Neurological Manifestations of Thyroid Disease
- Nontoxic Goiter
- Papillary Thyroid Carcinoma
- Riedel Thyroiditis
- Subacute Thyroiditis
- Substernal Thyroid Goiter
- Thyroid Dysfunction Induced by Amiodarone Therapy
- Thyroid Hormone Toxicity
- Thyroid Nodule
- Thyroid-Associated Orbitopathy
- Thyrotoxic Storm Following Thyroidectomy
- Thyroxine-Binding Globulin Deficiency
- Toxic Nodular Goiter

### **Physiology (ILMUL AFAL) Ph.D. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
PHY1	111	*Advance Studies in Principles of Medicine	100	2+1
PHY3	112	Cell & Nerve Muscle Physiology	100	3
PHY5	113	Neurophysiology	100	3
PHY7	114	*Designing Clinical Research	100	3
PHY9	115	Body Fluids, Renal Physiology	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
PHY2	121	* Computer Applications in Health Education	100	3
PHY4	122	Endocrinology	100	3
PHY6	123	Blood Cardiovascular & Respiratory Physiology	100	3
PHY8	124	*Biostatistics	100	3
PHY10	125	GIT Physiology	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06

**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

## FIRST SEMESTER

### **PHY1-111 \*Advance Studies in Principles of Medicine – Theory Semester-I (Credit Hours 2+1)**

1. Humours – nature, types and classification
2. Disruption of temperament related to organs, age and sex
3. Organs, nature and variety (bones, muscles, nerves, arteries and veins)
4. Faculties and functions
5. Concept of Disorders in Unani Medicine.
6. Classification of maltemperament and their production in human body.
7. Management of maltemperament according to different types of maltemperament their principles of management.
8. Basic points to evaluate temperament.
9. Qualitative of Quantitative aspect of humours.
10. Specific ratio of humours in body and disturbance in this ratio.
11. Role of six essential causes in preservation of health.

#### **Practical:**

1. Temperament evaluation
2. Management of seasonal abnormalities
3. Management of temperamental abnormalities
4. General regimen for diseases

### **PHY3-112 Cell & Nerve Muscle Physiology – Theory Semester-I (Credit Hours 3)**

- Cell and Nerve Muscle Physiology
- Membrane Systems Couple Nerve Excitation to Muscle Contraction
- The neuromuscular junction connects nerve to muscle

### **PHY5-113 Neurophysiology – Theory Semester-I (Credit Hours 3)**

#### **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	
Tactile, temperature and pain sensations	Injuries and diseases of spinal cord

Structure of cerebral cortex	Analgnesia system
Sensory cortex	Disorders of cranial nerves
Motor cortex	
Motor pathways, Pyramidal and Extrapyramidal	Hemiplegia/Paraplegia
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
	Abnormalities of speech
Physiology 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	
<b>Special Senses</b>	
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 evoked potentials
	Olfaction/Taste abnormalities
Physiology of smell-receptors and	

## **PHY7-114 \*Designing Clinical Research – Theory Semester-I (Credit Hours 3)**

### **Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

### **Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

### **Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

### **Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study
- Case-control study
  - Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism

- Writing and funding a research proposal
- Writing methodology
- Ethical issues

## **PHY9-115 Body Fluids, Renal Physiology – Theory Semester-I (Credit Hours 3)**

Renal sodium handling for body fluid maintenance and blood pressure regulation

1. Rate metabolic wastes (urea, creatinine)
2. Maintain extracellular volume and osmolar homeostasis
  - volume, osmolarity, electrolyte concentration
3. Regulate acid-base balance
  - osmolarity NaCl, electrolytes, glucose, urea
4. Regulate extracellular fluid composition (EFC)
  - osmolarity ECF = osmolarity ICF
  - if osmolarity ECF increases; water goes from ICF  $\square$  ECF
5. Synthesize and regulate hormones and autacoids
  - renin-angiotensin-aldosterone (blood pressure and Na regulation)
  - erythropoietin (RBC synthesis): stimulates bone marrow  $\square$  RBC
  - vit D metabolites (bone metabolism): helps absorb Ca from diet; helps incorporate Ca into new bone
    - liver converts 1,25 dihydroxy vit D into its active form
    - deficiency  $\square$  rickettes
  - prostaglandins (vasoconstriction and dilation, salt and water regulation)

Total Body Water Compartments  $\blacklozenge$  Electrolytes & Non-Electrolytes Distribution  
 $\blacklozenge$  Starling's Forces & Membrane Permeability  $\blacklozenge$  Net Filtration Pressure  $\blacklozenge$   
 Body Water – Clinical Correlation

<b>SECOND SEMESTER</b>
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## **PHY2-121 \*Computer Applications in Health Education – Theory Semester-II (Credit Hours 3)**

- Introduction to computer application, knowledge regarding system parts and their uses.
- Importance of Microsoft Office.
- Computer virus.
- Strategies for the promotion of computer applications in healthcare delivery.
- Introduction of SPSS
- Date types
- Complete statistical analysis
- Reference writing: Endnote software

- Ethical issues
- Plagiarism software
- Computerized Systems for Health Professionals- Focuses upon skills and knowledge required of a professional in health sciences. Application of computers to gather, organize, and distribute health resources; apply computer assisted communication techniques and computer applications in data collection, analysis, and reporting in the health sciences.
- Biomedical Data: Their Acquisition, Storage, and Use.-
- Biomedical Decision Making: Probabilistic Clinical Reasoning.- Cognitive Science and
- Biomedical Informatics.- Computer Architectures for Health Care and Biomedicine.
- Evaluation of Biomedical and Health Information Resources.- Electronic Health Record Systems.- The Health Information Infrastructure.-
- Management of Information in Health Care Organizations.- Patient-Centered Care Systems.-
- Public Health Informatics.- Consumer Health Informatics and Personal Health Records.- Telehealth.- Patient Monitoring Systems.- Imaging Systems in Radiology.- Information Retrieval and Digital Libraries.- Clinical Decision-Support Systems.-
- Computers in Health Care Education.- Bioinformatics.- Translational Bioinformatics.- Clinical Research Informatics.- Health Information Technology Policy.- The Future of Informatics in Biomedicine.
- Applications of Computers in Health Care Delivery: An Overview
- Clinical laboratory and radiology, assisting in technology development (computer languages, software, and hardware),
- Enhancing the management of specific conditions such as HIV infection, and supporting health data coding and standards initiatives

### **Recommended Books:**

1. Matthew JZ, A Student guide to the statistical package for the Social Sciences ®, 2001, <http://www.amazon.com/The-SPSS%C2%AE-Book-Statistical-Sciences%C2%AE/dp/059518913X>.
2. Andy F, Discovering Statistics Using SPSS, 2007, [http://books.google.com.pk/books/about/Discovering\\_Statistics\\_Using\\_SPS\\_S.html?id=5253SAL5nDgC&redir\\_esc=y](http://books.google.com.pk/books/about/Discovering_Statistics_Using_SPS_S.html?id=5253SAL5nDgC&redir_esc=y).
3. SPSS Manuals  
[http://www.unt.edu/rss/class/Jon/SPSS\\_SC/Manuals/SPSS\\_Manuals.htm](http://www.unt.edu/rss/class/Jon/SPSS_SC/Manuals/SPSS_Manuals.htm)
4. Lawrence M. F, Medical informatics: Computer Applications in Health Care and Biomedicine (Health Informatics), 2<sup>nd</sup> Edition, Springer Publication 2011, [http://www.goodreads.com/book/show/1505743.Medical\\_Informatics](http://www.goodreads.com/book/show/1505743.Medical_Informatics).
5. Edward H. S, Leslie E. P, Medical informatics: Computer Applications in Health Care and Biomedicine, Springer, 2001-Computers-854 pages, [http://books.google.com.pk/books/about/Medical\\_informatics.html?id=PjFrAAAMAAJ&redir\\_esc=y](http://books.google.com.pk/books/about/Medical_informatics.html?id=PjFrAAAMAAJ&redir_esc=y)



## **PHY4-122 Endocrinology – Theory Semester-II (Credit Hours 3)**

### **ENDOCRINOLOGY:**

- Chemical classes of hormones
  - Amines
  - Peptide and protein
  - Steroid
- History and key discoveries of endocrinology
- Endocrinology as a profession
  - Work
  - Training
  - Professional organizations
- Patient education
- Diseases

#### **Adrenal Gland**

- Addison Disease
- Adrenal Carcinoma
- Adrenal Crisis
- Adrenal Crisis in Emergency Medicine
- Adrenal Disease and Pregnancy
- Adrenal Hemorrhage
- Adrenal Incidentaloma

#### **Diabetes Mellitus**

- Blood Glucose Monitors
- Bullous Disease of Diabetes
- Diabetes Mellitus and Pregnancy
- Diabetic Foot Infections
- Diabetic Ketoacidosis
- Diabetic Neuropathy
- Diabetic Retinopathy
- Diabetic Ulcers
- Glucose Intolerance
- Hypoglycemia
- Infection in Patients With Diabetes Mellitus
- Insulinoma
- Ketosis-Prone Type 2 Diabetes
- Nutrition in Patients With Diabetes
- Pediatric Diabetic Ketoacidosis
- Pseudohypoglycemia
- Somogyi Phenomenon
- Type 1 Diabetes Mellitus
- Type 2 Diabetes Mellitus

#### **Gonads**

- Amenorrhea
- Anabolic Steroid Use and Abuse

- Androgen Excess
- Androgenetic Alopecia
- Anovulation
- Dysfunctional Uterine Bleeding
- Fallopian Tube Reconstruction
- Follicle-Stimulating Hormone Abnormalities
- Gonadotropin-Releasing Hormone Deficiency in Adults
- Gynecomastia
- Hirsutism
- Luteal Phase Dysfunction
- Luteinizing Hormone Deficiency
- Ovarian Insufficiency
- Ovotesticular Disorder of Sexual Development

### **Metabolic Bone Disease**

- Bone Markers in Osteoporosis
- Osteopetrosis
- Osteoporosis in Solid Organ Transplantation

### **Metabolic Disorders**

- Acquired Partial Lipodystrophy
- Alcoholic Ketoacidosis
- Beriberi (Thiamine Deficiency)
- Calcinosis Cutis
- Calciphylaxis
- Carotenemia
- Cholesterol Embolism
- Cyclooxygenase Deficiency
- Diseases of Tetrapyrrole Metabolism - Refsum Disease and the Hepatic Porphyrins
- Familial Hypercholesterolemia
- Generalized Lipodystrophy
- Glucose-6-Phosphatase Deficiency
- High HDL Cholesterol (Hyperalphalipoproteinemia)
- Hyperglucagonemia
- Hyperglycemia and Hypoglycemia in Stroke
- Hypertriglyceridemia
- Inborn Errors of Metabolism
- Insulin Resistance
- Lecithin-Cholesterol Acyltransferase Deficiency
- Localized Lipodystrophy
- Low HDL Cholesterol (Hypoalphalipoproteinemia)
- Low LDL Cholesterol (Hypobetalipoproteinemia)
- Methylmalonic Acidemia
- Necrobiosis Lipoidica
- Neonatal Hypoglycemia
- Obesity
- Ochronosis
- Osteoma Cutis

- Polygenic Hypercholesterolemia
- Porphyria Cutanea Tarda
- Pretibial Myxedema
- Propionic Acidemia
- Protein-Energy Malnutrition
- Pyridoxine Deficiency
- Pyruvate Carboxylase Deficiency
- Pyruvate Kinase Deficiency
- Respiratory Acidosis
- Respiratory Alkalosis
- Riboflavin Deficiency
- Scurvy
- Type Ia Glycogen Storage Disease
- Type Ib Glycogen Storage Disease
- Type II Glycogen Storage Disease (Pompe Disease)
- Type III Glycogen Storage Disease
- Type IV Glycogen Storage Disease
- Type V Glycogen Storage Disease
- Type VI Glycogen Storage Disease
- Type VII Glycogen Storage Disease
- Vitamin A Deficiency
- Vitamin D Deficiency and Related Disorders
- Vitamin E Deficiency
- Vitamin K Deficiency

### **Miscellaneous Topics in Endocrinology**

- Endocannabinoids

### **Multiple Endocrine Disease and Miscellaneous Endocrine Disease**

- Endocrine Myopathies
- Exocrine Pancreatic Insufficiency
- Glucagonoma
- Hypercalcemia
- Hyperchloremic Acidosis
- Hyperkalemia
- Hypermagnesemia in Emergency Medicine
- Hyponatremia
- Hyperosmolar Hyperglycemic State
- Hyperphosphatemia
- Hyperuricemia
- Hypoalbuminemia
- Hypocalcemia
- Hypokalemia
- Hyponatremia
- Hypophosphatemia
- Hyporeninemic Hypoaldosteronism
- Lactic Acidosis
- Lichen Amyloidosis
- Macular Amyloidosis

- McCune-Albright Syndrome
- Multiple Endocrine Neoplasia Type 1
- Neoplasms of the Endocrine Pancreas
- Nodular Localized Cutaneous Amyloidosis
- Type 2 Multiple Endocrine Neoplasia
- Type I Polyglandular Autoimmune Syndrome
- Type II Polyglandular Autoimmune Syndrome
- Type III Polyglandular Autoimmune Syndrome
- VIPomas
- Wermer Syndrome (MEN Type 1)

### **Parathyroid Gland**

- Hyperparathyroidism
- Hypoparathyroidism
- Milk-Alkali Syndrome
- Parathyroid Carcinoma
- Pseudohypoparathyroidism

### **Pituitary Gland**

- Diabetes Insipidus
- Growth Hormone Deficiency
- Growth Hormone Replacement in Older Men
- Hyperprolactinemia
- Hypopituitarism (Panhypopituitarism)
- Kallmann Syndrome and Idiopathic Hypogonadotropic Hypogonadism
- Nasal and Sublabial Approaches to the Pituitary
- Pituitary Apoplexy
- Pituitary Disease and Pregnancy
- Pituitary Macroadenomas
- Pituitary Microadenomas
- Prolactin Deficiency
- Prolactinoma

### **Thyroid**

- Anaplastic Thyroid Carcinoma
- Autoimmune Thyroid Disease and Pregnancy
- Diffuse Toxic Goiter
- Euthyroid Hyperthyroxinemia
- Euthyroid Sick Syndrome
- Follicular Thyroid Carcinoma
- Goiter
- Graves Disease
- Hashimoto Thyroiditis
- Hurthle Cell Carcinoma
- Hyperthyroidism
- Hyperthyroidism, Thyroid Storm, and Graves Disease
- Hypothyroidism
- Hypothyroidism and Myxedema Coma
- Iodine Deficiency
- Lithium-Induced Goiter

- Medullary Thyroid Carcinoma
- Myxedema Coma or Crisis
- Neurological Manifestations of Thyroid Disease
- Nontoxic Goiter
- Papillary Thyroid Carcinoma
- Riedel Thyroiditis
- Subacute Thyroiditis
- Substernal Thyroid Goiter
- Thyroid Dysfunction Induced by Amiodarone Therapy
- Thyroid Hormone Toxicity
- Thyroid Nodule
- Thyroid-Associated Orbitopathy
- Thyrotoxic Storm Following Thyroidectomy
- Thyroxine-Binding Globulin Deficiency
- Toxic Nodular Goiter

## **PHY6-123 Blood Cardiovascular & Respiratory Physiology – Theory**

### **Semester-II (Credit Hours 3)**

#### **BLOOD PHYSIOLOGY**

Components, Characteristics, Functions of Blood

#### **Contents**

- 1 Overview of Blood
  - 1.1 Gas Exchange
- 2 Blood Composition
  - 2.1 Plasma makeup
  - 2.2 Red Blood Cells
    - 2.2.1 Overview
    - 2.2.2 Functions
  - 2.3 White Blood Cells
    - 2.3.1 Functions
  - 2.4 Platelets
- 3 Hemostasis (Coagulation or Clotting)
- 4 ABO Group System
  - 4.1 Surface Antigens
  - 4.2 Inheritance
  - 4.3 Compatibility in Blood/Plasma Transfusions
    - 4.3.1 Hemolytic Disease of the Newborn
- 5 Diseases of the Blood
  - 5.1 Von Willebrand Disease
  - 5.2 Disseminated Intravascular Coagulation
  - 5.3 Hemophilia
  - 5.4 Factor V Leiden
  - 5.5 Anemia
  - 5.6 Sickle cell
  - 5.7 Polycythemia

- 5.8 Leukemia

### **Cardiovascular physiology**

1. Electromyogram (emg)
2. Pacemakers (in order of their inherent rhythm)
3. Ways to alter the vascular function curve
4. Cardiac & vascular function curves
5. Changes in cardiovascular performance
6. Hormonal regulation
7. Renal--body fluid control mechanism
8. Interaction between peripheral & central sensors

### **Respiratory physiology**

1. Volumes
2. Mechanics
3. Circulation, ventilation, and perfusion
4. Gas exchange/transport (primarily oxygen and carbon dioxide)
5. Control and response
6. Disorders

### **PHY8-124 \*Biostatistics – Theory Semester-II (Credit Hours 3)**

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 compression 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

### **Recommended Books:**

#### **Biostatistics**

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3<sup>rd</sup>
2. Edition, (1983).
3. Zar J H, **Biostatistical Analysis**, Francis Hall, NJ, USA.
4. Nilton J S, Tsokos J D, **Statistical Methods in Biological and Health Sciences**, (McGrew-Hill) (1983).
5. Sher Muhammad Chaudhry, **Introduction to Statistical Theory**, Ilmi Kitab Khana, Urdu Bazar, Part-I and II, Lahore.
6. Burhan Uddin Nafis, Translated Hakim Mohammad Kabiruddin, **Sharaha-e-Asbab**, Vol 4<sup>th</sup>, Shokat Book Depot, Gujrat (1984).

7. Burhan Uddin Nafis, Translated Khawaja Rizwan Ahmed, Sharaha-e-Asbab Darul Talifat, Karachi (1990).
8. Hakim Mohammad Ajmal Khan, Hazique, Shokat Book Depot, Gujrat (1990).
9. Hakim Muhammed Said, Tajrubate Tabib, Hamdard Foundation, Karachi (1990).
10. Hakim Abdul Hameed, Marajal Baehrain, Shaikh Gulam and Sons, Lahore Vol 1-3, (1185).
11. Hakim Muhammad Azam Khan, Al- Akaseer (Translated), Alshifa, Faisalabad (1990).
12. Hakim Ghulam Jilani, Makhzanul Hikmat, Tibbi Kutub Khana, Lahore (1985).
13. Hakim Muhammad Hassan Qarshi, Jamaul Hikmat, Makatb Mushir ul Attabba, Lahore (1986).
14. Bu Ali Seena, Translated Hakim Kabir Uddin, Al-Qanoon, Mallick Sons, Faisalabad (1991).
15. C.R.W. Edward, and I.A.D. Boucher:Eds, Davidsons Practice of Medicine, BPC Publisher, London (1990)

**PHY10-125            GIT Physiology – Theory**  
**Semester-II (Credit Hours 3)**

**Gastrointestinal Tract**

Structure and general functions, Enteric nervous system, 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.



**Clinical Pathology & Microbiology (ILMUL-AMRAZ-VA-ILM-  
E-KHURD-HAYATIYAT)  
Ph.D. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
CPM1	111	*Concepts of Pathology in Unani Medicine	100	2+1
CPM3	112	Fundamentals of Immunology	100	3
CPM5	113	Medical Bacteria & Fungi	100	3
CPM7	114	Cellular Basis of Disease	100	3
CPM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
CPM2	121	*Designing Clinical Research	100	3
CPM4	122	Biology of Viruses	100	3
CPM6	123	Molecular & Cellular Microbiology	100	3
CPM8	124	Microbiological Diagnosis	100	3
CPM10	125	* Computer Applications in Health Education	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06

**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

<b>FIRST SEMESTER</b>
-----------------------

**CPM1-111 \*Concepts of Pathology in Unani Medicine – Theory Semester-I (Credit Hours 2+1)**

1. Humours – nature, types and classification
2. Disruption of temperament related to organs, age and sex
3. Organs, nature and variety (bones, muscles, nerves, arteries and veins)
4. Faculties and functions
5. Concept of Disorders in Unani Medicine.
6. Classification of maltemperament and their production in human body.
7. Management of maltemperament according to different types of maltemperament their principles of management.
8. Basic points to evaluate temperament.
9. Qualitative of Quantitative aspect of humours.
10. Specific ratio of humours in body and disturbance in this ratio.

11. Role of six essential causes in preservation of health.

**Practical:**

1. Temperament evaluation
2. Management of seasonal abnormalities
3. Management of temperamental abnormalities
4. General regimen for diseases

**CPM3-112 Fundamentals of Immunology – Theory  
Semester-I (Credit Hours 3)**

**FUNDAMENTALS OF IMMUNOLOGY:**

- Introduction
- Clinical Immunology
- Innate Immunity-Discuss how the immune system rapidly mobilizes its innate defenses to a site of injury or infection
- Antigen Processing and Presentation-Describe how CD8 T cells are able to identify cells that are infected or cancerous; Describe how CD4 T cells are able to identify cells harboring bacteria or parasites.
- Immune Cell Trafficking -Describe how multi-step adhesion cascades orchestrate tissue selective leukocyte traffic in microvessels; Discuss the mechanisms affording immune surveillance of the body by migratory innate and adaptive immune cell subsets.
- T Cell Activation-Describe how T lymphocytes recognize antigens, the role of costimulators in T cell activation and the functions of inhibitory receptors in terminating T cell responses.
- B Cell Activation and Regulation-Describe the role of B cells in disease; Describe how B cells and T cells interact.
- NK and NKT Cells - Discuss the role of natural killer cells in host protection against certain viral infections and cancer; Discuss the emerging evidence that immune memory can be mediated by both innate and adaptive immune systems.
- CD4+ and CD8+ T Cell-Mediated Immunity-Distinguish the contributions of different helper T cell subsets to human disease; Describe how CD8+ T cells defend against viral infections and tumors.
- Tolerance and Immune Regulation-Describe the mechanisms of central and peripheral tolerance in T cells and the role of regulatory T cells in controlling immune responses.
- **Tumor Immunology** - Discuss the mechanisms underlying effective tumor immunity; describe the challenges in generating effective tumor immunity.
- **Autoimmunity** Recognize the multiple immune mechanisms that contribute to autoimmunity; Discuss how these mechanisms apply to human diseases, and how our understanding of them has direct implications on our therapeutic interventions in autoimmune diseases.

- **Mucosal Immunity** *Discuss the basic principles of mucosal immunology and the implications these have for IBD.*
- **Transplantation** Discuss the alloimmune response including the origin of alloimmune T lymphocytes and the difference between direct and indirect alloimmune responses; Describe the mechanisms of action of currently used immunosuppressive medications; Discuss several immunotherapeutics being evaluated for use in solid organ transplantation.
- New and Emerging Approaches to Human Immunology

### **CPM5-113 Medical Bacteria & Fungi – Theory Semester-I (Credit Hours 3)**

- Interactions between fungi and bacteria
- Physical Complexes between Bacteria and Fungi
- Bacterial-Fungal Molecular Interactions and Communication-Interactions via antibiosis, Signaling-based interactions, Interaction via modulation of the physiochemical environment, Interactions via chemotaxis and cellular contacts, Trophic interactions, Interactions via cooperative metabolism, Interactions via protein secretion and gene transfer.
- Consequences of Bacterial-Fungal Interactions for Participating Organisms
- Effects on fungal pathogenicity
- Effects on bacterial and fungal physiology
- Effects on survival, dispersal, and colonization
- Evidence for heritable changes.
- Complexity in life cycles.
- Impact on other organisms and the environment
- Influence on Host Nutrition
- Roles in Host Health and Disease

### **CPM7-114 Cellular Basis of Disease – Theory Semester-I (Credit Hours 3)**

**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, Kleni filter 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 Inversion, 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

### **CPM9-115 \*Biostatistics – Theory Semester-I (Credit Hours 3)**

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

### **Recommended Books:**

#### **Biostatistics:**

1. Daniel W W, **Biostatistics: Foundation for Analysis in Health Science**, 3<sup>rd</sup> 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.
5. Burhan Uddin Nafis, Translated Hakim Mohammad Kabiruddin, **Sharaha-e-Asbab**, Vol 4<sup>th</sup>, Shokat Book Depot, Gujrat (1984).
6. Burhan Uddin Nafis, Translated Khawaja Rizwan Ahmed, **Sharaha-e-Asbab Darul Talifat**, Karachi (1990).
7. Hakim Mohammad Ajmal Khan, **Hazique**, Shokat Book Depot, Gujrat (1990).
8. Hakim Muhammed Said, **Tajrubate Tabib**, Hamdard Foundation, Karachi (1990).

9. Hakim Abdul Hameed, Marajal Baehrain, Shaikh Gulam and Sons, Lahore Vol 1-3, (1185).
10. Hakim Muhammad Azam Khan, Al- Akaseer (Translated), Alshifa, Faisalabad (1990).
11. Hakim Ghulam Jilani, Makhzanul Hikmat, Tibbi Kutub Khana, Lahore (1985).
12. Hakin Muhammad Hassan Qarshi, Jamaul Hikmat, Makatb Mushir ul Attabba, Lahore (1986).
13. Bu Ali Seena, Translated Hakim Kabir Uddin, Al-Qanoon, Mallick Sons, Faisalabad (1991).
14. C.R.W. Edward, and I.A.D. Boucher:Eds, Davidsons Practice of Medicine, BPC Publisher, London (1990)

## SECOND SEMESTER

### **CPM2-121 \*Designing Clinical Research – Theory Semester-II (Credit Hours 3)**

#### **Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

#### **Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

#### **Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

#### **Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study
- Case-control study
  - Nested case-control study
- Cross-sectional study

- Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism
- Writing and funding a research proposal
- Writing methodology
- Ethical issues

## **CPM4-122 Biology of Viruses – Theory Semester-II (Credit Hours 3)**

### **BIOLOGY OF VIRUSES**

- Etymology
- History
- Origins
- Microbiology
  - Life properties
  - Structure
  - Genome
  - Genetic mutation
  - Replication cycle
  - Effects on the host cell
  - Host range
- Classification
  - ICTV classification
  - Baltimore classification
- Role in human disease
  - Epidemiology
  - Epidemics and pandemics
  - Cancer
  - Host defence mechanisms
  - Prevention and treatment
    - Vaccines
    - Antiviral drugs
- Infection in other species
  - Animal viruses
  - Plant viruses
  - Bacterial viruses
  - Archaean viruses

- Role in aquatic ecosystems
- Role in evolution
- Applications
  - Life sciences and medicine
  - Materials science and nanotechnology
  - Synthetic viruses

## **CPM6-123 Molecular & Cellular Microbiology – Theory Semester-II (Credit Hours 3)**

### **MOLECULAR AND CELLULAR MICROBIOLOGY**

- Cellular morphology and function, genome organization, regulation of genetic expression, morphogenesis, and somatic cell genetics.
- Bacterial Adhesion to Host Tissues
- Bacterial Cell-to-Cell Communication
- Bacterial Evasion of Host Immune Responses
- Bacterial Invasion of Host Cells
- Bacterial Protein Toxins
- Bacteriophage Ecology
- Dendritic Cell Interactions with Bacteria
- Dormancy and Low Growth States in Microbial Disease
- Horizontal Gene Transfer in the Evolution of Pathogenesis
- Susceptibility to Infectious Diseases
- The Dynamic Bacterial Genome

## **CPM8-124 Microbiological Diagnosis – Theory Semester-II (Credit Hours 3)**

### Manifestations of Infection

The clinical presentation of an infectious disease reflects the interaction between the host and the microorganism. This interaction is affected by the host immune status and microbial virulence factors. Signs and symptoms vary according to the site and severity of infection. Diagnosis requires a composite of information, including history, physical examination, radiographic findings, and laboratory data.

### Microbial Causes of Infection

Infections may be caused by bacteria, viruses, fungi, and parasites. The pathogen may be exogenous (acquired from environmental or animal sources or from other persons) or endogenous (from the normal flora).

### Specimen Selection, Collection, and Processing

Specimens are selected on the basis of signs and symptoms, should be representative of the disease process, and should be collected before



administration of antimicrobial agents. The specimen amount and the rapidity of transport to the laboratory influence the test results.

## Microbiologic Examination

**Direct Examination and Techniques:** Direct examination of specimens reveals gross pathology. Microscopy may identify microorganisms.

Immunofluorescence, immuno-peroxidase staining, and other immunoassays may detect specific microbial antigens. Genetic probes identify genus- or species-specific DNA or RNA sequences.

**Culture:** Isolation of infectious agents frequently requires specialized media. Nonselective (noninhibitory) media permit the growth of many microorganisms. Selective media contain inhibitory substances that permit the isolation of specific types of microorganisms.

**Microbial Identification:** Colony and cellular morphology may permit preliminary identification. Growth characteristics under various conditions, utilization of carbohydrates and other substrates, enzymatic activity, immunoassays, and genetic probes are also used.

**Serodiagnosis:** A high or rising titer of specific IgG antibodies or the presence of specific IgM antibodies may suggest or confirm a diagnosis.

**Antimicrobial Susceptibility:** Microorganisms, particularly bacteria, are tested in vitro to determine whether they are susceptible to antimicrobial agents.

## **CPM10-125      \*Computer Applications in Health Education – Theory Semester-II (Credit Hours 3)**

- Introduction to computer application, knowledge regarding system parts and their uses.
- Importance of Microsoft Office.
- Computer virus.
- Strategies for the promotion of computer applications in healthcare delivery.
- Introduction of SPSS
- Date types
- Complete statistical analysis
- Reference writing: Endnote software
- Ethical issues
- Plagiarism software
- Computerized Systems for Health Professionals- Focuses upon skills and knowledge required of a professional in health sciences. Application of computers to gather, organize, and distribute health resources; apply computer assisted communication techniques and computer

applications in data collection, analysis, and reporting in the health sciences.

- Biomedical Data: Their Acquisition, Storage, and Use.-
- Biomedical Decision Making: Probabilistic Clinical Reasoning.- Cognitive Science and
- Biomedical Informatics.- Computer Architectures for Health Care and Biomedicine.
- Evaluation of Biomedical and Health Information Resources.- Electronic Health Record Systems.- The Health Information Infrastructure.-
- Management of Information in Health Care Organizations.- Patient-Centered Care Systems.-
- Public Health Informatics.- Consumer Health Informatics and Personal Health Records.- Telehealth.- Patient Monitoring Systems.- Imaging Systems in Radiology.- Information Retrieval and Digital Libraries.- Clinical Decision-Support Systems.-
- Computers in Health Care Education.- Bioinformatics.- Translational Bioinformatics.- Clinical Research Informatics.- Health Information Technology Policy.- The Future of Informatics in Biomedicine.
- Applications of Computers in Health Care Delivery: An Overview
- Clinical laboratory and radiology, assisting in technology development (computer languages, software, and hardware),
- Enhancing the management of specific conditions such as HIV infection, and supporting health data coding and standards initiatives

### **Recommended Books:**

1. Matthew JZ, A Student guide to the statistical package for the Social Sciences ®, 2001, <http://www.amazon.com/The-SPSS%C2%AE-Book-Statistical-Sciences%C2%AE/dp/059518913X>.
2. Andy F, Discovering Statistics Using SPSS, 2007, [http://books.google.com.pk/books/about/Discovering\\_Statistics\\_Using\\_SPS\\_S.html?id=5253SAL5nDgC&redir\\_esc=y](http://books.google.com.pk/books/about/Discovering_Statistics_Using_SPS_S.html?id=5253SAL5nDgC&redir_esc=y).
3. SPSS Manuals  
[http://www.unt.edu/rss/class/Jon/SPSS\\_SC/Manuals/SPSS\\_Manuals.htm](http://www.unt.edu/rss/class/Jon/SPSS_SC/Manuals/SPSS_Manuals.htm)
4. Lawrence M. F, Medical informatics: Computer Applications in Health Care and Biomedicine (Health Informatics), 2<sup>nd</sup> Edition, Springer Publication 2011, [http://www.goodreads.com/book/show/1505743.Medical\\_Informatics](http://www.goodreads.com/book/show/1505743.Medical_Informatics).
5. Edward H. S, Leslie E. P, Medical informatics: Computer Applications in Health Care and Biomedicine, Springer, 2001-Computers-854 pages, [http://books.google.com.pk/books/about/Medical\\_informatics.html?id=PjFrAAAMAAJ&redir\\_esc=y](http://books.google.com.pk/books/about/Medical_informatics.html?id=PjFrAAAMAAJ&redir_esc=y)

**Materia Medica (ILMUL ADVIAH)  
Ph.D. Program First Year**

Course Code	Course No.	First Semester	Marks	Cr. Hr.
MTM1	111	*Advance Studies in Principles of Medicine	100	2+1
MTM3	112	Principle of Drug Action	100	3
MTM5	113	ANS & CNS Drugs	100	3
MTM7	114	Pharmacokinetics and pharmacodynamics of Eastern Medicine Drugs	100	3
MTM9	115	*Biostatistics	100	3
<b>Total Marks / Total Course 5</b>			500	14+1

Course Code	Course No.	Second Semester	Marks	Cr. Hr.
MTM2	121	*Designing Clinical Research	100	3
MTM4	122	Metabolism of Eastern Medicine drug	100	3
MTM6	123	Drugs of Animal & Mineral Origin	100	3
MTM8	124	Endocrine Pharmacology & Therapeutics	100	3
MTM10	125	* Computer Applications in Health Education	100	3
<b>Total Marks / Total Course 5</b>			500	15

3<sup>rd</sup> and 4<sup>th</sup> semester thesis credit hour 06

**Total Credit Hour 36 Total Marks: 1000**

- The student has to complete 18 credit hours course work.
- The student has to take 2 compulsory courses (for each semester).
- \* Compulsory courses.

<b>FIRST SEMESTER</b>
-----------------------

**MTM1-111 \*Advance Studies in Principles of Medicine – Theory Semester-I (Credit Hours 2+1)**

1. Humours – nature, types and classification
2. Disruption of temperament related to organs, age and sex
3. Organs, nature and variety (bones, muscles, nerves, arteries and veins)
4. Faculties and functions
5. Concept of Disorders in Unani Medicine.
6. Classification of maltemperament and their production in human body.
7. Management of maltemperament according to different types of maltemperament their principles of management.

8. Basic points to evaluate temperament.
9. Qualitative of Quantitative aspect of humours.
10. Specific ratio of humours in body and disturbance in this ratio.
11. Role of six essential causes in preservation of health.

**Practical:**

1. Temperament evaluation
2. Management of seasonal abnormalities
3. Management of temperamental abnormalities
4. General regimen for diseases

**MTM3-112 Principle of Drug Action – Theory  
Semester-I (Credit Hours 3)**

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.

**Principle 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

**MTM5-113 ANS & CNS Drugs – Theory  
Semester-I (Credit Hours 3)**

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.

**MTM7-114 Pharmacokinetics and pharmacodynamics of  
Eastern Medicine Drugs – Theory  
Semester-I (Credit Hours 3)**

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).

## **MTM9-115 \*Biostatistics – Theory**

### **Semester-I (Credit Hours 3)**

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

### **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).

#### **Biostatistics**

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

**MTM2-121 \*Designing Clinical Research – Theory  
Semester-II (Credit Hours 3)**

**Introduction to clinical research**

**Selection of research topics and types of research questions hypothesis**

**Literature search**

**Sampling technique: choosing the study subject sample size**

**Clinical research design**

- Outline of types of designs for clinical studies
  - Clinical studies
  - Observational studies

**Clinical studies**

- Randomized controlled trial
  - Double-blind randomized trial
  - Single-blind randomized trial
  - Non-blind trial
  - Sampling technique
- Adaptive clinical trial
- Nonrandomized trial (quasi-experiment)
  - Interrupted time series design (measures on a sample or a series of samples from the same population are obtained several times before and after a manipulated event or a naturally occurring event) - considered a type of quasi-experiment

**Observational studies**

- Cohort study
  - Prospective cohort
  - Retrospective cohort
  - Time series study
- Case-control study
  - Nested case-control study
- Cross-sectional study
  - Community survey (a type of cross-sectional study)
- Statistical analysis applying statistical tests and P value
- Ecological study
- Causal inference
- Chance.
- Bias
- Confounding
- Intention-to-treat (ITT) analysis
- External validity of RCT
- Quasi-experimental research
- Reference Writing
- Plagiarism
- Writing and funding a research proposal

- Writing methodology
- Ethical issues

## **MTM4-122 Metabolism of Eastern Medicine drug – Theory Semester-II (Credit Hours 3)**

### (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



**MTM6-123 Drugs of Animal & Mineral Origin – Theory**  
**Semester-II (Credit Hours 3)**

- Abrresham
- 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

**MTM8-124 Endocrine Pharmacology & Therapeutics – Theory**  
**Semester-II (Credit Hours 3)**

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.

**MTM10-125 \*Computer Applications in Health Education – Theory**  
**Semester-II (Credit Hours 3)**

- Introduction to computer application, knowledge regarding system parts and their uses.
- Importance of Microsoft Office.
- Computer virus.
- Strategies for the promotion of computer applications in healthcare delivery.
- Introduction of SPSS

- Date types
- Complete statistical analysis
- Reference writing: Endnote software
- Ethical issues
- Plagiarism software
- Computerized Systems for Health Professionals- Focuses upon skills and knowledge required of a professional in health sciences. Application of computers to gather, organize, and distribute health resources; apply computer assisted communication techniques and computer applications in data collection, analysis, and reporting in the health sciences.
- Biomedical Data: Their Acquisition, Storage, and Use.-
- Biomedical Decision Making: Probabilistic Clinical Reasoning.- Cognitive Science and
- Biomedical Informatics.- Computer Architectures for Health Care and Biomedicine.
- Evaluation of Biomedical and Health Information Resources.- Electronic Health Record Systems.- The Health Information Infrastructure.-
- Management of Information in Health Care Organizations.- Patient-Centered Care Systems.-
- Public Health Informatics.- Consumer Health Informatics and Personal Health Records.- Telehealth.- Patient Monitoring Systems.- Imaging Systems in Radiology.- Information Retrieval and Digital Libraries.- Clinical Decision-Support Systems.-
- Computers in Health Care Education.- Bioinformatics.- Translational Bioinformatics.- Clinical Research Informatics.- Health Information Technology Policy.- The Future of Informatics in Biomedicine.
- Applications of Computers in Health Care Delivery: An Overview
- Clinical laboratory and radiology, assisting in technology development (computer languages, software, and hardware),
- Enhancing the management of specific conditions such as HIV infection, and supporting health data coding and standards initiatives

### **Recommended Books:**

1. Matthew JZ, A Student guide to the statistical package for the Social Sciences ®, 2001, <http://www.amazon.com/The-SPSS%C2%AE-Book-Statistical-Sciences%C2%AE/dp/059518913X>.
2. Andy F, Discovering Statistics Using SPSS, 2007, [http://books.google.com.pk/books/about/Discovering\\_Statistics\\_Using\\_SPS\\_S.html?id=5253SAL5nDgC&redir\\_esc=y](http://books.google.com.pk/books/about/Discovering_Statistics_Using_SPS_S.html?id=5253SAL5nDgC&redir_esc=y).
3. SPSS Manuals  
[http://www.unt.edu/rss/class/Jon/SPSS\\_SC/Manuals/SPSS\\_Manuals.htm](http://www.unt.edu/rss/class/Jon/SPSS_SC/Manuals/SPSS_Manuals.htm)
4. Lawrence M. F, Medical informatics: Computer Applications in Health Care and Biomedicine (Health Informatics), 2<sup>nd</sup> Edition, Springer Publication 2011, [http://www.goodreads.com/book/show/1505743.Medical\\_Informatics](http://www.goodreads.com/book/show/1505743.Medical_Informatics).

5. Edward H. S, Leslie E. P, Medical informatics: Computer Applications in Health Care and Biomedicine, Springer, 2001-Computers-854 pages, [http://books.google.com.pk/books/about/Medical\\_informatics.html?id=PjFrAAAMAAJ&redir\\_esc=y](http://books.google.com.pk/books/about/Medical_informatics.html?id=PjFrAAAMAAJ&redir_esc=y)

# ADMISSION AND EXAMINATIONS

## Post Graduate Studies (PhD)

### DOCTOR OF PHILOSOPHY (PhD.)

#### **Requirements:**

The degree of Doctor of Philosophy (Ph.D.) is a research degree awarded for a thesis considered to be a substantially original contribution to the subject concerned. The resolutions of the Academic Council of degree of Doctor of Philosophy (Ph.D.) are given in The University Calendar, Statutes and Regulations.

For Ph.D. master's degree or equivalent degree is required as per HEC directives.

For the Master of Philosophy, a bachelor's degree (BEMS or equivalent degree) is required as per HEC directives.

Applicants should normally hold a master's degree or a bachelor's degree in Eastern Medicine from the University, or an equivalent qualification from another university or institution.

#### **Areas of Research:**

Research in Eastern Medicine covers a broad spectrum of clinical sciences ranging from the design, formulations, clinical trials, through studies on methods of treatment of disease, to research on the clinical and sociological aspects of Unani therapies.

Doctor of Philosophy (Ph.D.) Ph.D. Program 1 year course work and 5-7 years thesis work

All applicants for research degrees must contact the Faculty before making a formal application to establish that their research proposal is likely to be acceptable and that there are adequate resources and facilities for the research, as well as appropriate supervision. Formal applications must be accompanied by a four-page research proposal.

### **I PhD. ADMISSIONS**

Admissions in Hamdard University are given according to merit

#### **1. Eligibility for Admissions.**

M.Phil. or Equivalent Degree

#### **2. Procedure and Condition of Admission.**

(a) The application on the prescribed form shall be made to the Registrar through the Dean, Faculty of Eastern Medicine and the Chairman concerned. It shall be accompanied with the synopsis

consisting of the objectives, plan of work, methodology and bibliography.

- (b) The Registrar shall present the application before the Board of Advance Studies and Research (BASR). The Board shall approve the title of the theses, the name of the research supervisor and course requirement.
- (c) The Registrar shall notify the decision of the BASR, with in 15 days of the meetings and shall direct the student to complete the admission formalities.
- (d) Every candidate shall pursue his/her research at the Hamdard University, Karachi or any other institution approved by the BASR.
- (e) No candidate shall undertake any employment during the period of his study. This rule shall not applicable to the teaching faculty of the Hamdard University.
- (f) No candidate shall, join another course of studies or appear at any other examination conducted by the University.

### **3. Progress Report**

The Student through his Supervisor will submit progress report every six months for the consideration of BASR, Hamdard University

### **4. Submission of Thesis**

- (a) The candidate shall not be allowed to submit the thesis after the end of 4<sup>th</sup> year from the date of admission
- (b) The plan of thesis should be as follows; statement of the problem to be investigated and introduction which should include the relevant background of the subject and scope of inquiry, precise description of methodology applied for the measurement or recording of experiments. The details of the data and analysis of the data should follow the results and discussion and conclusion. The precise literature citation should be on the standard format so that verification may be facilitated.

### **5. Examination of Thesis**

- (a) The thesis must be typewritten on one side of the paper with margin of 1-1/2 inch at each side. The number of pages of the thesis should not be less than 100 or more than 120 in any case. It shall be bound in cloth with title, name of the author and institution and year on the cover. Five copies of the thesis shall be submitted to the University of Evaluation.
- (b) On the submission of dissertation BASR, shall appoint three examiners to examine the thesis of the candidate. One of the examiners shall be the research supervisor, and the two shall be external examiners, not in the service of the university. If the three examiners give an adverse opinion about the thesis, it shall be rejected. However, the BASR on the recommendation of the Dean appoint additional (i.e.) fourth examiner and may consider to permits

to revise the thesis in accordance to comments of examiners. After modification/revision thesis may be re-submitted after a period of three months.

- (c) On the basis of favorable (positive) reports, the viva voce examination shall be supervised by the supervisor of research. The viva voce shall be conducted in the Office of the Dean who will act as a titular Chairman.
- (d) The degree shall be awarded on successful completion of the course work, approval of thesis by external, internal examiners and qualifying the viva voce examination.

## **II EXAMINATIONS AND GRADING**

### **1. Mid Term and Terminal Examination**

The examination held at the end of semester after the completion of a course shall be known as Terminal Examination. It will carry 100 marks each for theory and practical. This examination is a passing head i.e., a student must for each course obtain a minimum of 50% marks separately in theory and practical in this examination. In each semester students may be required to appear in quizzes, and submit assignments to be determined by the teacher concerned and for these HEC policy guidelines and implementation of semester system will be followed. The examination will

- i. Theory: Mid Term Test 30 Marks, Terminal Examination 70 Marks.
- ii. Practical: Terminal Examination 100 Marks.

Mid-term test will be conducted in the middle of semester whereas Terminal examination will be held at the end of semester after the completion of course work. At least 50% marks in each course must be obtained to pass the examination.

### **2. Grading System**

Grades given to a student in each course shall be of two types:

- a. *Numerical Grade (NG)*  
Assessment of performance on the basis of marks out of 100 fixed for a course of 3 or 4 credit hours unit is NG.
- b. *Letter Grade (LG)*  
Equivalent of numerical grades in terms of alphabets shall be termed as alphabetical grades. (Each letter carries a value in terms of numerical points).
- c. Grading

## Grading System

<u>Numerical Grade</u>	<u>Letter Grade</u>	<u>Grade Point</u>
90 & above	A+	4.00
85-89	A	4.00
80-84	A-	3.80
75-79	B+	3.40
71-74	B	3.00
68-70	B-	2.80
64-67	C+	2.40
61-63	C	2.00
57-60	C-	1.80
53-56	D+	1.40
50-53	D	1.00
Below 50	Fails	0.00

### Degree Requirements:

1. Letter Grades A, B, C or D in all courses.

2. Cumulative Grade Point Average (CGPA)\* - Minimum 2.45, calculated for all semesters.

$$\text{*CGPA} = \frac{\text{Sum of ( credit hours X GPA )}}{\text{Total credit hours}}$$

d. *Incomplete Grade (IG)*

A student fails to complete a course for reason beyond his control may be granted incomplete (IG). This course can be completed subsequently, for which fresh course fee be deposited.

Any student who fails to maintain a GPA 1.8 shall be placed on probation.

For incomplete courses no point shall be given.

e. *Grade Point Average (GPA)*

Points obtained in each course shall be multiplied by the number of Credit Hours specified for that course, and then a grade point ratio (GPR) shall be calculated. For example, the result of a 1<sup>st</sup> year student in a semester may be as follows:

f. *Cumulative Grade Point Average (CGPA)*

This is obtained by adding all the Grade Points of the courses during 5 years study period and dividing the total by the total number of credit hours.

### **3. Attendance**

Attendance in each subject is compulsory for all students and no student shall be eligible to appear at any University examination unless he has attended 75 per cent attendance in the course.

- i. The attendance of students admitted in the Faculty will be counted from the 1<sup>st</sup> day of semester and not from the date of admission.
- ii. If a student is unable to attend classes continuously for 15 days or more without informing the Dean/Chairperson of the Department (in writing) his/her admission will also stand cancelled. In case of illness or other similar situation, application along with a medical certificate from a registered medical practitioner duly verified by the Senior Medical Officer of the University must be submitted within two days after the incident. This may be informed to the Vice Chancellor accordingly.
- iii. Original attendance register is to be submitted to the Dean/Chairperson for record and future reference.

### **4. Maximum Duration for Completion of Degree**

The duration of completion Ph.D. degrees requirement will be followed as per University rules and regulations.

### **5. Requirement for the Award of Ph.D. Degree**

- a. A student must have passed all prescribed courses.
- b. A student must have obtained a minimum CGPA 2.45
- c. Submission of Ph.D. Thesis and Approval of BASR

### **6. Unfair means**

All the cases of unfair means will be forwarded to the unfair means Committee appointed for the purpose and the matter will be dealt with in accordance with the rules and regulations of the University.

### **7. Interpretation of Semester Rules**

The decision of the Faculty Committee, headed by the Dean, The Controller of Examination and all the Heads of Department of Faculty of would be final for the interpretation of semester rules. In case of any appeal the said Committee would dispose it off on its merits.



## RECOMMENDATIONS

1. It was suggested that Universities where BEMS degree course is being taught, it is mandatory to have a 50 bedded hospital of Eastern Medicine within four years time limit from starting program.
2. The Government of Pakistan shall be requested by HEC to help and make necessary legislation and allocate fund to establish a Center of Excellence in Eastern Medicine for the advancement of research and development.
3. HEC shall organize continuous education and refresher courses in line with the existing criteria faculty development and arrange the national and foreign experts for the purpose. They should deliver lectures and conduct workshops in Universities.
4. For an appropriate representation 50% representation is recommended for BEMS graduates in National Council for Tibb (NCT), nominated by the Dean of institution where BEMS program is operational. Or nomination representing in NCT shall be from the universities where BEMS program is being offered.
5. The HEC shall provide a sizeable grant for laboratory instruments, equipment and libraries of public and private sector institutions of Eastern Medicine.
6. The HEC should provide local and foreign scholarships to BEMS graduates for higher studies and research in the country and abroad.
7. A center of excellence in the field of manufacturing of Eastern Medicine for drug standardization is recommended.
8. It is also proposed that HEC and National Council for Tibb may recommend the creation of seats in the Government and Semi-Government hospitals for basic pay scale BPS-17 and above.
9. A Director Health level post shall be established under the Ministry of National Health Services Regulations and Coordination Islamabad, Pakistan (NHSRCP) Health for BEMS graduates to monitor/regulate the matters of Eastern Medicine in Pakistan. Existing position is Assistant Director Health Unani, in Drug Regulatory Authority Pakistan (DRAP) secretariat, Islamabad and as Assistant Director in all provincial capitals, be filled with BEMS graduates.

10. HEC Islamabad should allocate preferentially sizeable grant for the development of Faculty of Eastern Medicine in all the universities in Pakistan for public and private sectors.
11. HEC should encourage private and government sector to initiate BEMS program as an independent faculty