

# CURRICULUM OF FORENSIC MEDICINE

## MBBS COURSE

### Contents

S. No.	Subject	Page No.
1.	Introduction	02
2.	Educational Hours	03
3.	Learning Outcomes	04
4.	Educational Strategies	05
5.	Assessment	06
6.	Learning Resources	07
7.	Contents Modules	08
8.	Implimentation	09-10
9.	Programme Evaluation	11
10.	Table of Specification	12-13
11.	Modules	14-18

## INTRODUCTION

The basic sciences subject will be covered during first and second year. Anatomy is taught with its clinical application and use in clinical subjects. Due to nature of this subject educational strategies of diverse approaches are employed. Educational resources like videos, biological specimens, microscopy slides, books and journals are used to learn this diverse subject. Clinical exposure is used for clinical application of forensic medicine.

3rd year is divided in three educational terms which conclude at with formative assessment test. End of year is University exam for summative assessment.

## EDUCATIONAL HOURS

Year	Theory	Practical	Total
3rd year	50 hours	50 hours	100
Total	50 hours in 36 weeks/year	50 hours	100 hours
Strategy	Lectures Problem based learning Small group discussion Case based discussion	Laboratory session Microscopy sessions Postmortem sessions Clinical sessions Audio video sessions	

# LEARNING OUTCOMES

AT THE END OF CURRICULUM STUDENT WILL BE ABLE TO

## EDUCATION STRATEGIES

The educational strategies in this curriculum are multiple and aligned with domain of learning and according to the desired outcome

### **Didactic lectures**

One-third of the curriculum will be delivered in a traditional didactic format including PowerPoint presentations and case discussions. Didactic education is considered to be a one-way transmission of material from teacher to learner, we cannot overlook the possibility of meaningful interaction between experts and learners during live lectures. This type of interaction, which allows for immediate clarification of concepts and extension of knowledge, may be particularly important for novice learners who have relatively little exposure to the subject matter, such as our study population.

### **Problem based learning**

A lot of emphasis is on case based discussion. Problem-based learning (PBL) is complex and heterogeneous. A wide variety of educational methods are referred as PBL. These include Lecture-based case, Case based lecture, Case based discussions, Problem or inquiry based and Closed loop or reiterative. Incorporation of case based discussion in teaching enhances the critical thinking and problem-solving skills. It also helps in developing a broader prospective of clinical case scenarios.

### **Small Group Discussion**

Small group discussion provides a unique environment to achieve high standards in medical education. Activation of prior knowledge, exchange of ideas, and engagement at a higher cognitive level are assumed to result in deeper learning and better academic achievements by students.

### **Video sessions**

Forensic Medicine is a subject which involves visual learning and formulating concepts. Video assisted learning sessions also provides opportunities to learn Forensic Medicine.

### **Laboratory Sessions**

Laboratory sessions are important as they provide opportunity for experiential learning in terms of study of slides and identification of tissues

### **Postmortem and Court Visits**

Postmortem sessions are important part of curriculum to achieve psychomotor and affective outcomes. This provide opportunity for medical students in and will stimulate contextual learning. For proper orientation and practical demonstration, visits are also made to: Court, Forensic science laboratory, Psychiatric unit or jail, Site during condiction of exhumation.

# ASSESSMENT

## MCQ's and SEQ's

Multiple choice question and short essay question test will be used at the end of part of curriculum to assess the learning of knowledge. These all assessment exercises will be formative. The written tests like Multiple-Choice Questions (MCQs) and Short-Essay Questions (SEQs) test formats are used for the assessment of cognitive domain. The MCQs are more objective and essentially select type of item response format. MCQs have a cueing effect, which promotes guessing and leads to higher scores. In addition, writing MCQs of higher cognitive level of problem solving is challenging. On the contrary, the SEQs are more subjective and have a supply or construct type item response format, which does not have any cueing effect and can effectively assess problem solving skills.

## Clinical exam and OSCE

Short case and OSCE will be used to evaluate clinical skills and procedural skills at the ward end of placement. The OSCE is a method of clinical skill assessment, and it has been reported to be appropriate for assessing learning achievement levels in the psychomotor and emotional domains, which are difficult to evaluate with written examinations.

## Viva Voce

Viva voce is used for assessment of knowledge and problem solving ability of students. This method is useful evaluating cognitive domain.

## Assignments

Students of different year will be given assignment of different nature such as research and literature search and surveys

## INTERNAL ASSESSMENT

- i. The weightage of internal assessment shall be 10% of totals marks.
- ii. Continuous internal assessment shall consist of evaluation at the end of each assignments, e.g. stages/sub-stage, class tests etc., attitudinal assessment from educational supervisors.
- iii. Assessment of knowledge, Skills and Attitude shall contribute toward internal assessment. Methods used to assess these domains shall include Multiple Choice Questions of one-best type, Short essay questions, Oral/Viva, and Practical/Clinical examinations.
- iv. The score of internal assessment shall contribute to the score in the final examination, Final university examination of each subject shall contribute 90 to total score, and the candidate shall pass in aggregate.
- v. Proper record of continuous internal assessment shall be maintained.

## LEARNING RESOURCES

The department of forensic medicine will require following resources for implementation resources:

- Human resource
- Instructors (faculty members)
- Curriculum coordinator curriculum secretary
- Infrastructure
- Lecture hall with AV aids
- Tutorial room with AV aids
- Museum with Forensic Specimens
- Lab with Pool of slides
- Postmortem videos
- Simulated patients and simulated manikins
- Computers

## LISTS OF CONTENT RESOURCES

- Simpson's Forensic Medicine by Barnard Knight, 11th Ed., Edward Arnold, London.
- Parikh's Text book of Medical Jurisprudence, Forensic Medicine and Toxicology by C.K. Parikh 6th Ed., CBS Publisher.
- Buchanan's Text book of Forensic Medicine and Toxicology by Buchanan, 9th Ed., Livingstone.
- G. Principles and Practice of Forensic Medicine by Prof. Nasib R. Awan.
- Medical Jurisprudence and Toxicology by Dr. Siddique Hussain.

# CONTENTS MODULES

S.No	Topic
1	<b>Module 1</b> Pakistan Legal System
2	<b>Module 2</b> Forensic Sciences
3	<b>Module 3</b> Law in relation to medical men
4	<b>Module 4</b> Personal Identity
5	<b>Module 5</b> Thanatology
6	<b>Module 6</b> Traumatology
7	<b>Module 7</b> Violent deaths due to asphyxia
8	<b>Module 8</b> Autopsy
9	<b>Module 9</b> Forensic Sexology
10	<b>Module 10</b> Sexual offences and relevant sections of law (Zina and Hudood Ordinance)
11	<b>Module 11</b> Miscarriage
12	<b>Module 12</b> Crime against new born, infants and child
13	<b>Module 13</b> Forensic Psychiatry
14	<b>Module 14</b> Examination of biological specimens
15	<b>Module 15</b> General Principles of Toxicology
16	<b>Module 16</b> Specific Poisons
17	<b>Module 17</b> Practical work



## IMPLEMENTATION

The curriculum will be spread over 1 year with 36 working weeks each year. During this period student will be exposed to various education strategies to achieve the learning objectives.

### 3rd Year.

In this year student will be exposed to postmortem session, histology lab, Museum and clinical-clinical exposure to develop understanding of forensic medicine and its applied aspects.

Theory (Lecture, SGD and PBL)	Practical (Postmortem, Lab, Museum)
50 Hours (36 Weeks)	50 Hours

Third Year			
	First term	Second term	Third term
1st Term			
2nd Term			
3rd Term			
Assessment			

# PROGRAMME EVALUATION

## Purpose of Evaluation

The major goals of the evaluation are to provide information that the students can use to achieve curricular objectives and that the faculty can use to monitor quality of and improve curriculum.

## Design of Evaluation

The evaluation design as only posttest.

## Users of evaluation: students, curriculum faculty, Principal Office

Resources: Curriculum faculty and departmental secretaries. No additional funding

## Evaluation question:

- What percentage of students achieved 75% mandatory attendance?
- What percentage of students achieved pass marks in university exam?
- What are the strengths of the curriculum? What are the weaknesses? How can the curriculum can be improved?

Because of limited resources, the evaluation was kept simple. Data Collection was integrated into the curriculum schedule. The major goals of the evaluation are to provide information that the students can use to achieve curricular objectives and that the faculty can use to monitor quality of and improve curriculum. The evaluation design as only posttest.

## End of curriculum evaluation form:

This will be filled by students and faculty members for evaluation of adequacy with each content was covered, whether they would recommend the curriculum to others and written comments on curriculum strengths, weaknesses and suggestions for improvements.

## Annual Report:

Based on evaluation of the educational programe report will be generated annually and submitted to Medical Educational Department.

## FORENSIC MEDICINE & TOXICOLOGY

TABLE OF SPECIFICATION ( Theory)			
Sr. No.	Topic Specification	MCQ's	SEQ's
1	a) Pakistan Legal System b) Law in Relation To Medical Man c) Forensic Psychiatry	01	05
2	Thanatology	01	03
3	TRAUMATOLOGY a) General Traumatology b) Special Traumatology c) Firearm Injuries d) Transportation Injuries e) Thermal Injuries f) Electrical Injuries g) Violent Deaths Due to Asphyxia	01	09
4	Personal Identity & Examination of Biological Specimens (Trace Evidence)	01	05
5	Autopsy, Exhumation & Forensic Sciences	01	04
6	Forensic Sexology Sexual offences and relevant sections of law (Zinc and Hudood Ordinance) And Miscarriage / Abortion, Delivery, New Born, Child Trauma Etc.	01	04
7	TOXICOLOGY a) GENERAL TOXICOLOGY B) SPECIAL TOXICOLOGY i) Alcohol ii) Opiates, opioids and other narcotics iii) Salicylates and paracetamol iv) Hypnotics and sedatives v) Stimulants (cocaine), cannabis vi) Poisonous plants (aconite, belladonna, hyoscyamus, stramonium, digitalis, ergot, mushrooms, nux vomica, oleander, tobacco) vii) Venomous insects (snakes) viii) Inorganic elements, antimony, arsenic, lead, mercury, phosphorus. ix) Volatile poisons and corrosives (carbon monoxide, hydrocarbons, cyanides, sulfuric acid, oxalic acid, carboic acid and alkalis) x) Pesticides, herbicides and insecticides	01 02	03 12 02 01 01 02 01 01  01 01  01  01

## FORENSIC MEDICINE & TOXICOLOGY

FORENSIC MEDICINE									
SEQ's 45 Marks		MCQ's 45 Marks		Int. Assess- ment	Sub Total	Oral and Practical (marks	Int. Ass	Sub Total	Grand Total
9 SEQ's	5 Marks each	65 MCQ's	1 Marks each	10	100	90	10	100	200
2 Hours		45 min							

Contents	Objectives	Do-main	Strategy	Assess-ment
<b>Module 1: Pakistan's Legal System:</b>				
	<ul style="list-style-type: none"> <li>The powers and jurisdiction of courts, procedures for inquest, and legal procedures. Important legal terms. Application of relevant Legal Sections of the Penal Code. The role of a medical doctor in the medico-legal system. To give Medical evidence in courts. Document information to be prepared by a medical doctor for legal procedures. Procedure of court attendance and recording of evidence.</li> </ul>	C3A3	LEC/SGD Court Visit	OSPE/VIVA MCQ/SEQ Assessment
<b>Module 2: Forensic Sciences:</b>				
	<ul style="list-style-type: none"> <li>Role of Forensic Sciences in crime detection.</li> </ul>	C3	LEC/SGD	OSPE/MCQ
<b>Module 3: Law in relation to medical men:</b>				
	<ul style="list-style-type: none"> <li>Privileges and obligations of Registered medical practitioner. Doctor-patient relationship in the context of the highest ethical standards. Temptations to professional misconduct. Guarding professional secrets and privileged communication. Maintaining highest ethical principles in medical examination and when obtaining consent. Medical negligence. Declaring Brain death, using the highest ethical and biological principles for the decision. The pros and cons of organ transplantation in each individual case.</li> <li>Develop and defend a personal moral view on Artificial insemination, Therapeutic abortions, Euthanasia, Biomedical research etc. in keeping with the norms of society and highest ethical principles.</li> </ul>	C3	LEC/SGD  Practical	MCQ/SEQ  OSPE/VIVA
<b>Module 4: Personal Identity</b>				
	<ul style="list-style-type: none"> <li>Parameters of personal identity, methods of identifying living, dead, decomposed, mutilated and burnt bodies, and skeletal and fragmentary remains, using special techniques (Dentistry Radiology, Neutron Activation Analysis etc.), and objective methods of identification (Osteometry, Dactyloscopy, D.N.A. Technique, Super imposition photography, etc.) Describe the role of various blood groups in resolving paternity and maternity disputes. Methods to determine time since death.</li> <li>Methods of determination of age, sex and race by various methods with their medico-legal aspects.</li> <li>Methods to trace evidence, Locard's Principle of exchange and its medico-legal significance.</li> </ul>	C3  C3P3A2 C3P3A2	LEC/SGD LAB  LAB LEC/SGD LAB	OSPE/VIVA MCQ/SEQ  OSPE/VIVA MCQ/SEQ OSPE/VIVA MCQ/SEQ

Contents	Objectives	Domain	Strategy	Assessment
<b>Module 5: Thanatology</b>				
	<ul style="list-style-type: none"> <li>Scientific concepts regarding death, medico-legal aspect of brain death, indicators of death, medico-legal aspects of sudden and unexpected deaths, causes, manner, mode and mechanisms of death.</li> <li>Physicochemical changes subsequent to death occurring in various body tissues and organs under various environmental conditions.</li> <li>To write a certification of death according to W.H.O guidelines.</li> </ul>	C3  C3 C3	LEC/SGD/ MUSEUM  LEC/SGD/ MUSEUM LEC/SGD/	OSPE/VIVA MCQ/SEQ  OSPE/VIVA MCQ/SEQ Assessment
<b>Module 6: Traumatology</b>				
	<ul style="list-style-type: none"> <li>Mechanical Injuries: Mechanisms of wound production, classification of wounds, wounds produced by conventional weapons and their medico-legal aspects. Firearms, ammunition, classification, nomenclature, wound ballistics and medico-legal aspects.</li> <li>Mechanical injuries medicolegal considerations: Laws in relation to causing bodily harm, wounding and homicide.</li> <li>Examination of an injured person, certify nature, manner of injury, causative agent and dating of wounds.</li> <li>Link Sequelae of trauma to its original cause and search for the relationship of sequelae to pre-existing disease.</li> <li>Causes of death from wounds.</li> <li>Difference between ante-mortem and post-mortem wounds.</li> <li>To diagnose whether death is suicidal, homicidal or accidental.</li> <li>The student should also have knowledge of and be able to describe methods of treatment and possible etiologies of regional injuries, and should be able to suture simple superficial wounds of:</li> <li>Head (scalp, skull, brain) and face, vertebral column and its contents, neck, chest, abdomen, limbs, bones and joints. and Special trauma such as transportation injuries, police torture, and Death in custody and Should be able to determine the medico-legal aspects of heat, cold, electrical injuries.</li> </ul>	C3  C3 C3P2A2 C3  C3 C3 C3 C3P2A2  C3P2A2	LEC/SGD  LEC/SGD LAB/EMER LEC/SGD  LEC/SGD LEC/SGD LEC/SGD LAB/EMER  LAB/EMER	MCQ/SEQ  MCQ/SEQ OSPE/VIVA MCQ/SEQ  MCQ/SEQ MCQ/SEQ MCQ/SEQ OSPE/VIVA  OSPE/VIVA
<b>Module 7: Violent deaths due to asphyxia</b>				
	<ul style="list-style-type: none"> <li>Anatomical, physiological, biochemical and pathological signs of violent death and of mechanical, chemical and environmental asphyxial death and their medico-legal implications. Death due to drowning.</li> </ul>	C3	LEC/SGD	MCQ/SEQ OSPE

Contents	Objectives	Domain	Strategy	Assessment
<b>Module 8: Autopsy:</b>				
<ul style="list-style-type: none"> <li>Types, objectives, rules, and techniques and describe procedure for postmortem.</li> <li>Methods for assessment of fatal period and postmortem interval. Post-mortem artifacts.</li> <li>Risks and hazards of autopsy, and autopsy protocol.</li> <li>Procedure for selection and preservation, labeling and dispatch of biological and non-biological materials for laboratory examination; and collection of relevant samples.</li> <li>Exhumation procedures, and their value and limitations.</li> </ul>	C3 C3 C3P2A2 C3P2A2	LEC/SGD LEC/SGD LAB/POST-MORTUM LAB/POST-MORTUM	MCQ/SEQ MCQ/SEQ OSPE/VIVA OSPE/VIVA	
<b>Module 9: Forensic Sexology.</b>				
<ul style="list-style-type: none"> <li>Virginity, pregnancy and criminal processes during delivery, their medico-legal aspects, examination procedure and reporting.</li> </ul>	C3P2A2	SGD/EMER	OSPE/VIVA	
<b>Module 10: Sexual offences and relevant sections of law (Zina and Hudood Ordinance)</b>				
<ul style="list-style-type: none"> <li>Natural and unnatural sexual offences. Medical examination of victim and assailant, collection of specific specimens and writing a required certification.</li> <li>Common sexual perversions and their cause.</li> </ul>	C3 C3	LEC/SGD LEC/SGD	MCQ/SEQ MCQ/SEQ	
<b>Module 11: Miscarriage</b>				
<ul style="list-style-type: none"> <li>Medico-legal aspects applicable to miscarriage examining mother and aborted material.</li> <li>Sending aborted material in proper preservative for examination.</li> </ul>	C3 C3P2A2	LEC/SGD EMER	MCQ/SEQ OSPE	
<b>Module 12: Crime against new born, infants and child:</b>				
<ul style="list-style-type: none"> <li>Infanticide, and criminal and non-accidental violence or abuse to a newborn, infant or child.</li> </ul>	C3	LEC/SGD	MCQ/SEQ	
<b>Module 13: Forensic Psychiatry</b>				
<ul style="list-style-type: none"> <li>To diagnose mental illness.</li> <li>To distinguish between true and feigned insanity.</li> <li>To advise on procedure of restraint of the mentally ill,</li> <li>Limitations to civil and criminal responsibilities of mentally ill.</li> </ul>	C3P2A2 C3P2A2 C3 C3	LEC/SGD LEC/SGD LEC/SGD LEC/SGD	OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA	
<b>Module 14: Examination of biological specimens</b>				
<ul style="list-style-type: none"> <li>Forensic importance of biological specimens (blood, semen, saliva, vomitus, breath, urine, hair),</li> <li>The method of their collection, preservation, dispatch and the common laboratory tests performed.</li> </ul>	C3 C3P2A2	LEC/SGD LAB	MCQ/SEQ OSPE/VIVA	



Contents	Objectives	Domain	Strategy	Assessment
<b>Module 15: General principles of Toxicology</b>	<ul style="list-style-type: none"> <li>The scope of Toxicology.</li> <li>To access the laws regulating drugs and noxious products.</li> <li>Common Toxicants in our environments and their abuse.</li> <li>Cause of drug dependence, the fate and detoxification of poisons in the biological tissues.</li> <li>To diagnose toxicological cases in acute and chronic exposure in living and dead. Utilize general principles of treatment with antidotal therapy and management.</li> <li>To handle specimens, work within the framework of duties of Doctor in cases of poisoning to prepare and interpret chemical examiners reports.</li> <li>Autopsy techniques with collection, preservation and dispatch of biological material to analytical laboratory.</li> </ul>	<p>C3</p> <p>C3</p> <p>C3</p> <p>C3</p> <p>C2P2A2</p> <p>C2P2A2</p> <p>C2P2A2</p>	<p>LEC/SGD</p> <p>LEC/SGD</p> <p>LEC/SGD</p> <p>LEC/SGD</p> <p>LAB/MUS</p> <p>LAB/EMER</p> <p>POST</p> <p>MARTUM</p>	<p>MCQ/SEQ</p> <p>MCQ/SEQ</p> <p>MCQ/SEQ</p> <p>MCQ/SEQ</p> <p>OSPE/VIVA</p> <p>OSPE/VIVA</p> <p>OSPE/VIVA</p>
<b>Module 16: Specific Poisons</b>	<ul style="list-style-type: none"> <li>Poisons/drugs of abuse prevailing in our society along with medico-legal aspects:</li> <li>Alcohol, Opiates, opioids and other narcotics, Salicylates and paracetamol, Hypnotics and sedatives, Stimulants (cocaine), cannabis, Poisonous plants (aconite, belladonna, hyoscyamus, stramonium, digitalis, ergot, mushrooms, nux vomica, oleander, tobacco), Venomous insects (snakes), Inorganic elements, antimony, arsenic, lead, mercury, phosphorus, Volatile poisons and corrosives (carbon monoxide, hydro carbons, cyanides, sulfuric acid, oxalic acid, carbolic acid and alkalis), Pesticides, herbicides and insecticides</li> </ul>	<p>C3</p> <p>C3</p>	<p>LEC/SGD</p> <p>LEC/SGD</p>	<p>MCQ/SEQ</p> <p>MCQ/SEQ</p>

Contents	Objectives	Domain	Strategy	Assessment
<p><b>Module 17: Practical work will include</b></p> <ul style="list-style-type: none"> <li>• Autopsies</li> <li>• Medico-legal examination of injured</li> <li>• Estimation of age and forensic radiology</li> <li>• Sexual assaults and sex related cases (impotence, pregnancy etc.).</li> <li>• Procedure of preservation, dispatch of biological and other evidentiary material.</li> <li>• Practical in biological laboratory (identification of blood, semen, saliva, etc.).</li> <li>• Procedure of consent taking and medical certification.</li> <li>• In Toxicology, students should have an understanding of and be able to describe : Diagnostic and management process (alcohol, narcotics and insecticide poisons).</li> <li>• Collection, preservation and dispatch of biological materials.</li> <li>• Visual, olfactory and tactile identification of common poisons.</li> <li>• Visits to Court, Forensic science laboratory, Psychiatric unit or jail, Site during conduction of exhumation.</li> </ul>		C3P2A2 C3P2A2 C3P2A2 C3P2A2 C3P2A2 C3P2A2 C3P2A2 C3P2A2 C3P2A2 C3P2A2 C3P2A2 C3P2A2 C3P2A2 C3P2A2	Postmortem LAB/SGD LAB/SGD LAB/SGD LAB/SGD LAB/SGD LAB/SGD LAB/SGD LAB/SGD LAB/SGD LAB/SGD LAB/SGD LAB/SGD LAB/SGD SGD	OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA OSPE/VIVA

Domain	Level
Knowledge	<b>C1</b> Knowledge <b>C2</b> Comprehension <b>C3</b> Application <b>C4</b> Analysis <b>C5</b> Synthesis <b>C6</b> Evaluation
Psychomotor	<b>P1</b> Observe <b>P2</b> Practice <b>P3</b> Adjust <b>P4</b> Master <b>P5</b> Develop <b>P6</b> Construct
Affect	<b>A1</b> Receiving <b>A2</b> Responding <b>A3</b> Valuing <b>A4</b> Organization <b>A5</b> Characterization