

ACADEMIC PROGRAM GUIDE

Third Year MBBS

Forensic Medicine & Toxicology



Lahore Medical & Dental College

Introduction

Medical profession is not only the noblest one, but very complex, as well. This demands a great deal of commitment, respect for humanity, orientation to a multi-cultural society and keeping oneself abreast of ever-growing knowledge base. A good doctor should be knowledgeable, skillful and display highest of moral values in his/ her attitude.

This guide is prepared keeping in view the premise of 'seven-star doctor' by PM&DC and Mission of LM&DC. It is expected to solve many relevant queries of students and shepherd them through their course of Forensic Medicine & Toxicology and MBBS program.

Educational Methodologies

1. Large group Session

- i. Power point presentation
- ii. White board, models
- iii. Equipment
- iv. Weapons, radiograph
- v. Mannequins

2. Practical (demonstration and performance)

- **Six different practical labs**
 - i. Forensic Serology
 - ii. Forensic Toxicology
 - iii. Forensic Anatomy
 - iv. Forensic Radiology
 - v. Forensic Autopsy
 - vi. Medico legal Certificate
- **30 practical demonstration to each batch**
- **Two to three OSPE mocks**

3. Tutorials

4. **Small group discussion**
 - i. Highly interactive
 - ii. Analytical discussion

5. **Skills lab – Four skills are practiced**

6. **Field trips**
 - i. Autopsy Facility
 - ii. Medico legal clinics
 - iii. Punjab Forensic Science Agency

7. **Two comprehensive assignments**
8. **Seminar**

Maintenance of Record:

- i. Attendance record (daily, monthly, quarterly)
- ii. Performance record (daily, monthly, quarterly)
- iii. In the form of 'one page' mini – portfolio format (Annual)



Paper-based & Electronic

Question Bank:

MCQs, SEQs, OSPE are modified by the professor periodically and then included in the question bank- an ongoing process.

Faculty Involvement:

- i. Lectures (Professor, Assoc. Prof., Demonstrators)
- ii. Practical (Professor, Assoc. Prof., Demonstrators)
- iii. Small group Discussion (Professor)
- iv. Tutorials (Professor)
- v. Field Trips (Professor)
- vi. Assignments (Professor)
- vii. Seminars (Professor)
- viii. Remedial classes (Professor/ Assoc. Prof)

Strategies for Weak Students:

- i. PTM (Parents' Teacher Meeting)
- ii. Small batches under the supervision of Professor/ Associate Professor
- iii. Active discussion
- iv. Assessment
- v. Problem solving and assignments
- vi. Individual assessment and counselling

Student Involvement:

- i. 'Open door policy' for students to redress their problem, academic or otherwise
- ii. Museum and laboratory facilities for students
- iii. Student presentations
- iv. Peer-assisted Learning (PAL)

Prof. Amir Bashir

Content and Learning Objectives

Sr. No	SECTION	FACILITATOR	ASSESSMENT
1	<p style="text-align: center;"><u>AUTOPSY AND EXHUMATION</u></p> <p>By the end of the module, students should be able to:</p> <p>Define Autopsy and Exhumation, its Types, Objectives, Principles, Rules, Techniques</p> <ul style="list-style-type: none"> • Perform Autopsy incision on dummy • Describe Autopsy protocol. • List & Describe essentials of autopsy suite & medico legal clinic • Identify & Explain risks and hazards of autopsy • Identify & Explain autopsy artifacts and negative autopsy • Interpret findings of autopsy on decomposed bodies, fragmentary & skeletal remains • Observe and Identify common procedures during his autopsy rotation • Interpret External & internal autopsy findings • Collect, Preserve & Dispatch samples for ancillary investigation 	Prof. Aamir Bashir	One

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THANATOLOGY

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

- **Define, classify, diagnose and explain** death and its medico legal significance.
- **Explain** concept of Brain and Brainstem death and its medico legal aspects.
- **Explain** Medico legal aspects of sudden and unexpected death.
- **Certify** cause of death according to World Health Organization (WHO) guidelines.
- **Explain** physico-chemical changes in body after death and factors modifying these changes and relation of these changes with the time scale after death.
- **Explain** Cause, Mechanism, Mode and Manner of death.
- **Estimate** POST MORTEM INTERVAL (PMI) by various methods
- **Differentiate** between postmortem staining and bruising, hypostasis and congestion, rigor mortis and cadaveric spasm, rigor mortis and other simulating conditions.
- **Interpret** Death Certificate
- **Conceptualize and Describe** various medico-legal systems of Death investigation
- **Explain** EUTHANASIA and its types
- **Understand and Apply "** Transplantation of Organs and Tissues" Act (2007)
- **Explain** Medical record-keeping & its medico-legal significance

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Two

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PERSONAL IDENTITY

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

- **Define** Personal Identity
- **Describe** parameters of personal identity.
- **Explain** various methods of identification.
- **Describe and Establish Identity** of decomposed, mutilated bodies, fragmentary and skeletal remains.
- **Describe and Establish** role of **Teeth** in identification and their medico legal importance.
- **Describe and Establish** role of **Radiology** in identification and its medico legal importance.
- **Describe and Establish** role of **Osteology** in identification and its medico legal importance.
- **Describe and Establish** role of the special identification techniques and recent developments in **DNA Testing, Forensic Photography, Osteometry, Finger Prints, Retinal Imaging, Lip Prints** and other esoteric techniques

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Three

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TRAUMATOLOGY

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

- **Define** Injury, wound and hurt.
- **Classify** injuries.
- **Explain** mechanics of wound production.
- **Explain** Mechanism of production of medico-legal injuries according to type of weapon
- **Recognize** cause-effect relationship in mechanical injuries.
- **Describe** medico legal aspects of mechanical injuries (cause or weapon/time/manner of infliction)
- **Describe** Patho-physiological effects of the injuries.
- **Determine** age of Injury.
- **Determine** nature of injuries whether ante-mortem / post-mortem (Vital Reaction)
- **Describe** relationship of trauma to the disease.
- **Interpret** the pattern of injuries in simulated conditions and on real patients and **Certify** them (MLC)

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LAWS RELEVANT TO MEDICINE

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

1. **Define** legal terms and **explain** procedures in the courts of law and evidence in the Court
2. **Differentiate** between Common Law, Statute Law, Criminal Law, Civil Law
3. **Describe** proceedings of Courts of Law, their powers and jurisdictions.
4. **Explain** and **Demonstrate** legal Procedures (court etiquettes), Evidence, Types of evidence, Admissibility of evidence, Deposition, Declaration, Stages of evidence.
5. **Explain** general Presumptions in Law, General Exceptions in Law, Unfit to plead, Diminished responsibility, Mc Naughton’ s Rule, Durham Rule, Feigned insanity, Mental Health Act 2001, Psycho-pathology of violence, its Predictors and Assessment

6. Explain

LEGAL ASPECTS OF MEDICAL PRACTICE

- Allopathic System, Alternative Medicine
- Medical and Dental Degree Ordinance 1980,
- Allopathic System (Prevention of misuse) Act 1962,

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| | <ul style="list-style-type: none"> • PMDC Ordinance (Amended 2013)
- Medical Register, Functions, Obligations/ Privileges, Lists, Procedures of registration • Relevant sections of Drug Act 1976 • Dangerous drug act 1930. • Mental Health Ordinance 2001 • Role and Types of Consent, and consent in vulnerable Population (Minors, Prisoners, Insane and others) • Medical Negligence and its types, Legal status, Doctor as a defendant in court of law • Professional Misconduct and its types • Professional Secrecy (Qualified & Absolute)
 • Concept of various Medical Documents (Four types) • 1. Existing criminal laws relating to: <ul style="list-style-type: none"> ○ Hurt (Criminal amendment Act 1997/ Qisas and Diyat Act); its definition, classification and medico-legal aspects. ○ Killings: QATL: Its definition, classification and interpretation in relation to medico legal aspects. | | |
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	<ul style="list-style-type: none"> o Sexual Assaults: Women protection Act 2006/ Hudood Ordinance 1979 <p>2. Laws related to Marriage and its dissolution</p> <p>3. Workman Compensation Act.</p> <p>4. Social Security Act</p>		
7	<p><u>MEDICAL ETHICS</u></p> <p>By the end of the module students should be able to:</p> <ul style="list-style-type: none"> • Comprehend PM&DC Code of Ethics • Interpret and Analyze Medical Ethics and its tenets • Know Ethics- Declarations of Geneva, Helsinki and related • Understand Research Ethics- Principles, ERB/ IRB, Plagiarism 	Prof. Aamir Bashir	Three

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FIREARM / BLAST INJURIES

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

- **Define** Firearms
- **Define** Ballistics.
- **Explain** the basics of Ballistics (Interior, Exterior and Terminal ballistics).
- **Describe** effects of firearms' injury on the body and its Medico legal aspects.
- **Explain** Mechanics of blast injuries.
- **Recognize** effects of blast injuries; DIRTY BOMB
- **Describe** Medico legal aspects of blast injuries
- **Identify** gun powders and ammunition used
- **Interpret** findings of injuries produced by different weapons
- **Identify** pattern/ characteristics of entry and exit wound
- **MLC** of Firearms Injury

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Transportation/ Regional Injuries

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

- **Explain** Motor vehicle ordinance 1965 (Relevant sections - Medical examination)
- **Classify:** Road traffic/Railway traffic/Air crash accidents
- **Recognize and Interpret** injuries to the driver/ pilot/passengers/pedestrians
- **Interpret** features of special trauma such as Custodial torture and death.
- **Interpret and Explain** trauma to Cranium and its contents & Spine and its contents and their Biomechanics

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ASPHYXIA

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

- **Define & Classify** Asphyxia.
- **Differentiate & Explain** Mechanical Asphyxia and its cause-effect relationship: **Suffocation, Smothering, Gagging, Hanging, Strangulation, Throttling, Choking, Traumatic Asphyxia, Autoerotic Asphyxia.**
- **Interpret & Explain** Death due to Drowning: its recognition, mechanism, diagnosis and medico legal aspects.
- **Recognize** each type of mechanical asphyxia by observing non - specific and specific findings and **Explain** its medico legal significance.

Explain Environmental Asphyxia: Recognition by autopsy findings and medico legal aspects.

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Accidents in Home & Environment

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

- **Define & classify** thermal injuries.
- **Explain** Injuries due to change in temperature: Various types of burns & their recognition in living and dead.
- **Explain** mechanism of death due to Electrocutation and Lightning and its patho-physiology
- **Explain** Radiation burns
- **Explain** Medico legal aspects of thermal injuries
- **Interpret & Explain** mechanism of Starvation and its patho-physiology in living & dead

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Sexual Offences, Related Issues and Forensic Paediatrics

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

- **Define & Explain** puberty, Impotence, Sterility, Virginity, Pregnancy and Delivery- Related Laws
- **Perform** examination, certification and handle medico-legal cases)
- **Define & Interpret** Abortion (Therapeutic & Criminal)
- **Explain** Methods of inducing criminal abortion
- **Observe and Describe** Examination in living & dead and medico legal issues of new born (still born/dead born/live born, if live born then cause of death, age of new born and others)
- **Recognize & Classify** sexual perversions: and explain their medico legal significance
- **Collect, preserve and dispatch** specimens in cases of sexual assaults
- **Explain, Perform** Medico-legal examination of a victim of an assault & **Certify**
- **Explain and Perform** Medico-legal examination of the alleged accused of rape & **Certify**
- **Explain and Perform** Medico-legal examination in unnatural sexual offence & **Certify**
- **Interpret & Explain** findings of Infanticide and criminal/non-accidental violence or to new born, infant or

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	<p>child; Sudden Infant Death Syndrome (SIDS)</p> <ul style="list-style-type: none"> • Interpret Psycho-pathology of assailant • Interpret Psycho-pathology of victim • Undertake initial management & referral of victim 		
13	<p><u>FORENSIC TOXICOLOGY</u></p> <p><u>1. GENERAL TOXICOLOGY</u></p> <p>By the end of the module students should be able to:</p> <ul style="list-style-type: none"> • Define and classify poisons • Describe different routes of absorption, metabolism, and excretion of poisons i.e. the role of various factors influencing poisoning in humans • Diagnose poisoning in living & dead • Manage case of poisoning. • Use antidotes • Explain the duties of medico legal officer to deal with a case of poisoning. • Interpret & Explain chronic industrial poisoning, its assessment and compensation • Apply the concept of collection, preservation, storage and transportation of biological material for toxicology analysis. • Identify poison from clinical findings • Identify poison by using all analytical technique. • Interpret related Laws. 	<p>Prof. Aamir Bashir</p>	<p>Three</p>

14	<p><u>2. SPECIAL TOXICOLOGY</u></p> <p>By the end of the module students should be able to:</p> <p>Diagnose, interpret & manage poisoning in living and dead, Narrate the Usual fatal dose and fatal period and Interpret the medico-legal significance of each of the poison listed below.</p> <p>1. MINERAL (INORGANIC) ACIDS: Sulfuric, Hydrochloric, Nitric, Hydrofluoric</p> <p>2. ORGANIC ACIDS: Acetic, Carbolic, Oxalic</p> <p>3. ALKALIES: Sodium Hydroxide, Hydrogen Peroxide</p> <p>4. NON-METALLIC IRRITANTS: Phosphorus, Aluminum Phosphide</p> <p>4. HALOGENS: Chlorine, Fluorine</p> <p>5. HEAVY METALS: Arsenic, Lead, Mercury, Thallium</p> <p>6. IRRITANT PLANTS: Dumbcane, Castor, Colocynth, Croton, Marking Nut, Capsicum</p> <p>7. HEPATO_TOXIC PLANTS: Neem</p> <p>8. VENOMOUS ANIMALS: Snakes and snake bite, Insects, Arachnids</p> <p>9. SOMNIFEROUS: Opium and allied</p> <p>10. INEBRIENTS: Alcohols, Benzodiazepines, Chloral Hydrate</p> <p>11. DELIRIANTS: Dhatura, Cannabis</p> <p>12. STIMULANTS: Amphetamines, Cocaine</p> <p>13. DRUGS: Anti-convulsant, Inhalational Anesthetics, Anti-depressants, LSD, Glue-sniffing, Paracetamol, Salicylates, NSAIDs, Anti-Histamines, Utero-tonics,</p> <p>14. SPINAL/ PERIPHERAL: Strychnine, Hemlock, Curare</p>	Dr. Wajeעה, Dr. Shameen, Dr. Unais, Dr. Arooj	<p>Nine</p> <p>Ten</p>
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	<p>15. HYDROCARBONS AND PESTICIDES: 16. FOOD POISONS: Microbial, Fish, Chemicals 17. RADIATIONS 18. DEPENDENCE & ABUSE: Tobacco and others, Physical and Psychological Dependence</p>		
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Assessment Methodology

- i. SEQs
- ii. MCQs
- iii. OSPE
- iv. Viva Voce
- v. Assignment

Feedback

(From Students)

- i. Three - quarterly, written (Structured, as well as open-ended)
- ii. Regular fortnightly (teaching and lab staff)
- iii. Personal Tutorial Sessions (PTS)
- iv. Verbal – continuously, throughout the session
- v. Of examinations – Two, written

(To Students)

- i. Results of tests, mid-term and send-up
- ii. Discussion on tests and results – Group and Individual

Learning Resources

1. **Simpson's Forensic Medicine by Barnard Knight**, 11th Ed., Edward Arnold, London.
2. **Forensic Medicine and Toxicology** by C.K. Parikh, 8th Ed., CBS Publisher.
3. **Buchanan's Text book of Forensic Medicine and Toxicology** by Buchanan, 9th Ed., Livingstone. G
4. **Principles and Practice of Forensic Medicine** by Prof. Nasib R. Awan.
5. **Medical Jurisprudence and Toxicology** by Dr. Siddique Hussain.
6. **World wide web**

Rules and Regulations

The students are expected to observe the following in letter and spirit. Violating these regulations will result in fine, rustication, expulsion, ineligibility or any other punitive measure as deemed necessary by college administration.

1. As per UHS regulations, a minimum of 75% attendance and good moral character are mandatory to sit the examinations. In addition, LM&DC requires at least 50% performance (overall) from a student to be eligible for end-year examinations.
2. Ragging is strictly prohibited. Anyone found guilty will be imposed with a heavy fine and other disciplinary actions including rustication/ expulsion from college/ hostel.
3. The students should wear white coat and their I.D tags all the time during academic hours.
4. Roaming in college premises is prohibited.

5. The appearance and dress code of students must be in acceptance with the accepted social norms and dignity of profession. The following are not allowed.
 - i. Extreme hair styles
 - ii. Revealing clothes
 - iii. Visible body part
 - iv. Body and face jewelry (except small ear studs, necklace and simple ring)
 - v. Untidy dress
 - vi. Slippers
6. Pasting/ hanging posters, graffiti and promotion material of any kind is prohibited.
7. Any type of political activity, demonstration, protest and procession are strictly prohibited. Offenders/ abettors will be expelled from college.
8. Any damage whatsoever caused by student will be recovered/ repaired 'as per actual' from him/ her. A fine may also be imposed.
9. All students must provide their and parents' / guardians' correct mailing address(es), phone numbers and emails. Any falsification in this regard will be considered as breach of discipline and any loss to college consequently, will be recovered from student in addition to fine.
10. Alcohol, drugs of abuse and arms of any and all types are strictly prohibited. Offender will be expelled from college.
11. Falsification/ abuse of college record/ data shall be considered as a serious offence, resulting in strict disciplinary action.
12. Any miss conduct/ negligence on the part of student which endangers the life, health and safety of other students and/ or staff or brings disrepute to college shall be considered as a serious offence and will be punished accordingly.
13. Impersonation for any academic, financial or otherwise gain shall be considered a serious offence and will be punished accordingly.
14. Theft and fraud will bring severe punitive action on offender.
15. Any intimidation/ harassment on the grounds of age, gender, race, disability or religious belief shall result in expulsion from college.
16. The premises are strictly 'NO SMOKING ZONE'. Any non-compliance in this regard will result in fine of Rs.1000/- and warning. The parents will also be intimated. On next violation, rustication of student will result. Third violation will result in expulsion from college.

17. Any kind of unauthorized press conference, interview, writing articles etc. in media (print and electronic) shall be seriously punished.
18. Parking of vehicles of students inside premises is not allowed.

Format of University Examinations

1. Theory Paper

- a. MCQs 45 (One mark each) 45 marks
- b. SEQs 09 (Five marks each) 45 marks
- c. Internal Assessment 10 marks

2. Practical/ OSPE

- a. OSPE 10 stations (Four marks each) 40 marks
- b. Internal Examiner 20 marks
- c. External Examiner 20 marks
- d. Practical Copy 10 marks
- e. Internal Assessment 10 marks

3. **TOTAL** ----- **200 marks**

Time Table

Annexed