

C. FORENSIC MEDICINE & TOXICOLOGY

The course outline is as follows :

1. FORENSIC MEDICINE

a) Pakistan's Legal System:

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.

b) Forensic Sciences:

Role of Forensic Sciences in crime detection.

c) Law in relation to medical men:

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.

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.

d) Personal Identity

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.

Methods of determination of age, sex and race by various methods with their medico-legal aspects.

Methods to trace evidence, Locard's Principle of exchange and its medico-legal significance.

e) Thanatology

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.

Physicochemical changes subsequent to death occurring in various body tissues and organs under various environmental conditions.

To write a certification of death according to W.H.O guidelines.

f) Traumatology

i) *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) *Mechanical injuries medicolegal considerations*: Laws in relation to causing bodily harm, wounding and homicide.

- Examination of an injured person, certify nature, manner of injury, causative agent and dating of wounds.
- Link Sequelae of trauma to its original cause and search for the relationship of sequelae to pre-existing disease.
- Causes of death from wounds.
- Difference between ante-mortem and post-mortem wounds.
- To diagnose whether death is suicidal, homicidal or accidental.

lii) 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:

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.

g) Violent deaths due to asphyxia

Anatomical, physiological, biochemical and pathological signs of violent death and of mechanical, chemical and environmental asphyxia and their medico-legal implications. Death due to drowning.

h) Autopsy:

- Types, objectives, rules, and techniques and describe procedure for postmortem.
- Methods for assessment of fatal period and postmortem interval. Post-mortem artifacts. Risks and hazards of autopsy, and autopsy protocol.
- Procedure for selection and preservation, labeling and dispatch of biological and non-biological materials for laboratory examination; and collection of relevant samples.
- Exhumation procedures, and their value and limitations.

i) Forensic Sexology.

Virginity, pregnancy and criminal processes during delivery, their medico-legal aspects, examination procedure and reporting.

j) Sexual offences and relevant sections of law (Zina and Hudood Ordinance)

- Natural and unnatural sexual offences. Medical examination of victim and assailant, collection of specific specimens and writing a required certification.
- Common sexual perversions and their cause.

k) Miscarriage

Medico-legal aspects applicable to miscarriage examining mother and aborted material.

Sending aborted material in proper preservative for examination.

l) Crime against new born, infants and child:

Infanticide, and criminal and non-accidental violence or abuse to a newborn, infant or child.

m) Forensic Psychiatry

- To diagnose mental illness.
- To distinguish between true and feigned insanity.
- To advise on procedure of restraint of the mentally ill, Limitations to civil and criminal responsibilities of mentally ill.

n) Examination of biological specimens

- Forensic importance of biological specimens (blood, semen, saliva, vomitus, breath, urine, hair),
- The method of their collection, preservation, dispatch and the common laboratory tests performed.

2. TOXICOLOGY

a) General principles of Toxicology

- The scope of Toxicology.
- To access the laws regulating drugs and noxious products.
- Common Toxicants in our environments and their abuse.
- Cause of drug dependence, the fate and detoxification of poisons in the biological tissues.
- To diagnose toxicological cases in acute and chronic exposure in living and dead. Utilize general principles of treatment with antidotal therapy and management.
- To handle specimens, work within the framework of duties of Doctor in cases of poisoning to prepare and interpret chemical examiners reports.

b) Autopsy techniques with collection, preservation and dispatch of biological material to analytical laboratory.

c) Specific Poisons

Poisons/drugs of abuse prevailing in our society along with medico-legal aspects:

- 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, carbolic acid and alkalis)
- x) Pesticides, herbicides and insecticides

Forensic Medicine

- a) Oral
- b) Practical
- c) Note book

Toxicology

- a) Oral
- b) Practical
- c) Note book

Learning Methodology:

Recommendations are as under:-

- A) Theory in the form of tutorials, seminars, videos and lectures
- B) Practical in the form of :
 - Demonstrations
 - Posting in autopsy rooms
 - Postings such as in medico-legal clinics / casualty departments / poison centers.
 - Experiments in biological laboratory.
- C) Visits.
- D) Periodical tests will provide feedback to the teachers and assess adequacy of learning.

Practical work will include

1. In Forensic Medicine
 - Autopsies
 - Medico-legal examination of injured
 - Estimation of age and forensic radiology
 - Sexual assaults and sex related cases (impotence, pregnancy etc.).
 - Procedure of preservation, dispatch of biological and other evidentiary material.
 - Practical in biological laboratory (identification of blood, semen, saliva, etc.).
 - Procedure of consent taking and medical certification.

2. In Toxicology, students should have an understanding of and be able to describe :
 - Diagnostic and management process (alcohol, narcotics and insecticide poisons).
 - Collection, preservation and dispatch of biological materials.
 - Visual, olfactory and tactile identification of common poisons found in communities and country.

3. Visits

For proper orientation and practical demonstration, visits are also suggested to a :

- Court.
- Forensic science laboratory.
- Psychiatric unit or jail
- Site during conduction of exhumation.

RECOMMENDED BOOKS

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