

## Curriculum- Forensic Medicine and Toxicology

Unit No.	Name of the chapter	Learning objectives <i>At the end of the topic, the students should know:</i>	Course contents	Teaching hours
1.	Introduction	The essence of forensic medicine and toxicology	Introduction to Forensic Medicine Definition of Forensic Medicine, State Medicine And Jurisprudence Important legal statutes-IPC, CrPC, IEA, etc. History of Forensic Medicine Current status in India and the World	1 hour
2.	Legal Procedure	i. Medical practice related legal procedures essential for doctors  ii. How to produce a valid medical evidence before law	Criminal Courts in India and their powers Inquest- Police and Magistrates, inquest procedure Various types of evidences including dying declaration Procedure of recording evidence in a court of law	2 hours
3.	Law in relation to medical man	i. The legal aspects of medical practice  ii. The various laws that govern the practice of modern medicine	Jurisprudence and law in relation to medicine Medical council of India, State medical council- functions and disciplinary control Rights and Duties of Registered Medical Practitioners Professional misconduct Codes of medical ethics Negligence- civil and criminal Consent to treatment Consumers Protection Act, Human organ Transplantation act, Workman compensation act, etc. NHRC and doctors Doctors and media, Ethics in research	5 hours
4.	Identification	i. The importance of identity of an individual  ii. Establishment of identity of an individual in doubtful cases	Personal identity Establishment of corpus delicti Identification of race Identification of sex and age, stature Identification from fingerprints, tattoo, scars, moles, etc Identification from skeletal remnants, and from miscellaneous evidences	4 hours

5.	Thanatology	<p>i. To diagnose brainstem death</p> <p>ii. To estimate the time since death for establishment of corpus delicti</p>	<p>Definition of death, Concept of brain stem death</p> <p>Modes of death, Manners of death</p> <p>Signs of death and Estimation of time since death from Eye changes, Algor mortis, post mortem lividity, rigor mortis, changes of decomposition</p>	3 hours
6.	Medico legal autopsy	<p>i. The objectives of Medicolegal autopsies</p> <p>ii. Guidelines for medicolegal autopsy</p> <p>iii. The general procedure followed for conducting an autopsy</p>	<p>Medico legal autopsy- objectives and prerequisites</p> <p>Method of opening body cavities</p> <p>Procedure of medico legal autopsy;</p> <p>Meaning of obscure autopsy and negative autopsy</p> <p>Causes of sudden unnatural death</p> <p>Preservation of viscera</p>	3 hours
7.	mechanical injuries and ML aspect of wounds	To identify various types of mechanical injuries during clinical practice, their mechanism of production and medicolegal interpretation	<p>Definition and meanings of injury, hurt, battery, assault, etc.</p> <p>Classification of mechanical injuries</p> <p>Abrasion, contusion and laceration- Features, medico legal aspects</p> <p>Incised wounds Stab wounds, chop wounds, fractures - Features, ML Aspects</p> <p>Medico legal aspects of injuries</p> <p>Diagnosis of antemortem from post-mortem injuries</p>	5 hours
8.	Firearm wounds	<p>i. The mechanism of wound ballistics</p> <p>ii. Diagnosis of wounds from various types of firearms and their medicolegal interpretation</p>	<p>Firearm wounds</p> <p>Essentials of ballistics, ML aspect, components of cartridges and their importance</p> <p>Diagnosis of wounds from shotguns and rifled firearms</p> <p>Autopsy diagnosis, medico legal aspect</p>	2 hours
9.	Regional injuries	The mechanism of production of various types of regional injuries including head injuries and their medicolegal interpretation	<p>Regional injuries</p> <p>Skull fractures, mechanism of brain injuries</p> <p>Concussion, diffuse axonal injuries, injury to other body parts, RTA, ML aspect</p>	2 hours
10.	Thermal injuries	i. Identify and differentiate	Thermal deaths	2 hours

		burns from scald injuries  ii. Medicolegal interpretation of burns, scalds, electrical injuries and radiation injuries	Classification Burns and scalds- classification, Rules of Nine, autopsy diagnosis, ML aspect Electrical injuries, Lightning and Radiation deaths- autopsy diagnosis and ML aspects	
11.	Asphyxia deaths	i. Diagnose the signs of hanging, strangulation, throttling, drowning, and other forms of asphyxia deaths	Asphyxial deaths Definition and types of violent asphyxia deaths Mechanism and signs of deaths due to asphyxia Definition and classification and diagnosis of hanging, strangulation, throttling, drowning and other asphyxia deaths	4 hours
12.	Forensic psychiatry	The relevance of mental illness in relation to law	Forensic psychiatry Symptoms of mental illness- ML aspects Mental Health act and Admission to psychiatric hospital Civil and criminal laws in relation to mental illness Diagnosis of feigned mental illness	3 hours
13.	Impotence and sterility Virginity, pregnancy and delivery Abortion Sexual offences	i. Diagnose impotence, sterility, virginity, criminal abortion  ii. Duties of a doctor in case of alleged sexual assault  iii. Examination and reporting of accused and victims of sexual assault	Impotence and sterility, artificial insemination legitimacy - ML aspects, Virginity, Pregnancy, Delivery, Abortion- diagnosis and ML aspects MTP act Rape and unnatural sexual offences- Examination, collection of evidentiary materials, ML aspects	4 hours
14	Infanticides	Diagnose and medicolegal interpretation of violence against the unborn and newborn infants	Infanticides- legal aspects Features of a viable infant Diagnosis of Live birth, still birth, hydrostatic test Sudden infant death syndrome, Battered baby, Munchausen syndrome by proxy	2 hours
15.	starvation	Diagnose starvation deaths	Causes, and autopsy diagnosis of starvation deaths	1 hour
16.	Forensic science laboratory and trace evidences	Medicolegal interpretation and preservation of various types of evidentiary materials to assist criminal	Forensic science laboratory- functions, divisions Locard's exchange principle Examination, preservation of	3 hours

		investigation	evidentiary materials like blood, semen, saliva, etc. DNA typing- applications, techniques, preservation of evidentiary materials	
17.	Operation and anaesthetic deaths	Various causes of death during operation, and the principles of criminal investigation	Operation and anaesthetic deaths- investigation principles	1 hour
18.	artefacts	Common artefacts and their interpretation	Artefacts and their interpretation	1 hour
19.	General toxicology	i. Duties of a doctor in a suspected case of poisoning  ii. Diagnosis and general management of poisoning cases	Forensic Toxicology- introduction, laws in relation to poisons Classification of poisons Duties of a doctor in a poisoning case Diagnosis of poisoning in living Autopsy diagnosis of poisoning, preservation of viscera General principle of management of a poisoning case Gastric lavage, antidotes	3 hours
20.	corrosives	Diagnosis and management principles of poisoning due to corrosives	Corrosive poisons- H <sub>2</sub> SO <sub>4</sub> , HCl, HNO <sub>3</sub> , carbolic acid, oxalic acid- Diagnosis, management and medicolegal aspects	1 hours
21.	Plant irritants	Diagnosis and management principles of poisoning due to irritants	Irritant poisons- Inorganic- phosphorus, halogens Organic vegetables- Diagnosis, management and medicolegal aspects	2 hours
22.	Bites and stings	i. Identification of venomous snakes  ii. Diagnosis and management principles of poisoning due to bites and stings	Bites and stings- snakes, scorpions Identification, Clinical features, Management, autopsy diagnosis, ML aspects	2 hours
23.	Heavy metal poisoning	Identification and management principles of poisoning due to heavy metals	Heavy metal poisoning- Lead, arsenic, mercury, iron copper, thallium, etc	2 hours
24.	CNS poisons	Diagnosis and management principles of poisons affecting Central Nervous system	Somniferous poisons- opium and derivatives, barbiturates Inebriant poisons- ethyl alcohol, Methyl alcohol, cholral hydrates, etc Deliriant poisons- Dhatura, cannabis and cocaine	6 hours

			Spinal poisons- strychnine Peripheral nerve poisons	
25.	Substance abuse	Diagnosis, management principles and medicolegal aspects of substance abuse	Psychotropic drugs Drugs of dependence, abuse, addiction- ML aspects	2 hours
26.	Agricultural poisons	Diagnosis and management principles agricultural and household poisons	Agricultural poisons- classification Organophosphorus Organochlorines, carbamates Household poisons- their source, clinical pictures, diagnosis and management	2 hours
27.	Cardiac poisons	Diagnosis and management principles of poisons affecting circulatory system	Cardiac poisons- Classification, types, Source, diagnosis, and management, and medicolegal aspects	1 hours
28.	Asphyxiants	Diagnosis and management principles of poisons affecting respiration	Asphyxiants- CO, Cyanides, H <sub>2</sub> S, etc- Source, diagnosis, and management, and medicolegal aspects	1 hours
29.	Food poisoning	Diagnosis and management principles of food poisoning	Food poisoning- Source, diagnosis, and management, and medicolegal aspects	1 hours
30.	Analytical toxicology	The principles of analytical toxicology	Emerging trends in poisoning Analytical toxicology	1 hours

## **Practical in Forensic Medicine and Toxicology for AIIMS, Rishikesh**

### **Objectives**

After the completion of the course, the students shall be able to-

1. Ensure a safe and litigation-free practice of modern medicine
2. Identify common medico legal problems and act accordingly
3. Examine and opine the common medico legal cases
4. Preserve, interpret the evidentiary materials for contemporary criminal investigations as required by the law
5. Able to perform routine medico legal autopsies as per the law of the land

### **Rationale behind designing the curriculum:**

1. Students will be taught the legal duties of a doctor in emergency situations, which are consistently ignored elsewhere
2. Training will be imparted on routine legal procedure that is expected from law enforcing agencies
3. The common MLCs encountered in clinical practice will be given due weightage.
4. Importance of evidentiary materials (collection, interpretation and preservation) is duly emphasized.
5. Important topics like MCCD, DNA profiling, and modern criminal investigations, which are likely to be the potential minefield for the future generation of doctors will be stressed.

S. No	Topic	Duration
<b>Jurisprudence (10 marks)</b>		
1.	Police intimation in medico legal cases	4 hour
2.	Recording of identification marks and their medico legal importance	
3.	Procedure of recording consent for various procedures	
4.	Procedure of maintaining Medico Legal Register	
5.	Proforma for medical certificates- sickness, fitness, etc.	
6.	Drafting a requisition letter- to other departments, laboratories, FSL, etc.	
<b>Clinical Forensic Medicine- Examination and Reporting (10 marks)</b>		
7.	Procedure of examination and reporting of Injury cases	2 hours
8.	Procedure of examination and reporting of drunkenness	2 hours
9.	Procedure of examination and reporting of potency	2 hours
10.	Procedure of examination and reporting of accused of sexual offences	2 hours
11.	Procedure of examination and reporting of victims of sexual offences	2 hours
12.	Procedure of examination and reporting of mental illness/ compose mentis	2 hours
13.	Procedure of examination and reporting for age determination a. From general physical examination b. From dental examination c. From radiological examination	4 hours
<b>Autopsy (10 marks)</b>		
14.	Medico Legal autopsy- demonstration of 10 cases (preservation of routine viscera for chemical analysis)	
15.	Examination of skeletal remnants	2 hours
16.	Foetal autopsy for demonstration of still birth	2 hours
17.	Medical certification of cause of death (MCCD)	2 hours
<b>Identification and interpretation of substances of medico legal importance (10 marks)</b>		
18.	Poisons- Plant poisons, snakes, heavy metals, etc	2 hours
19.	Photographs (mechanical injuries, firearms injuries, head injuries, thermal deaths, sexual offences, poisons, post-mortem changes, etc.)	2 hours
<b>Identification and interpretation &amp; preservation of medico legal exhibits (10 marks)</b>		
20.	Hairs, fibres, etc	2 hours
21.	Biological stains (Blood, semen, saliva, etc)	
22.	Cloth	2 hours
23.	Fingerprints	
24.	DNA analysis	
25.	Firearm and ammunition	
26.	Bite marks, tyre marks	2 hours
27.	Weapons	
28.	Demonstration of instruments for toxicological analysis	2 hours

<b>Sl. No.</b>	<b>Name of the chapter</b>	<b>Distribution of marks (out of 100)</b>
1.	Legal Procedures	6
2.	Law in relation to man	8
3.	identification	5
4.	Thanatology	3
5.	ML Autopsy	3
6.	Mechanical injuries	5
7.	Firearm Injuries	3
8.	Regional Injuries	3
9.	Thermal Injuries	3
10.	ML aspect of wounds	4
11.	starvation	1
12.	asphyxial deaths	4
13.	impotence and sterility	2
14.	virginity, pregnancy and delivery	2
15.	sexual offences	5
16.	abortion	4
17.	infanticide	2
18.	trace evidence	3
19.	forensic science laboratory	1
20.	forensic psychiatry	2
21.	general toxicology	3
22.	corrosive poisons	1
23.	plant irritants	1
24.	bites and stings	4
25.	phosphorus	1
26.	metallic poisons	4
27.	insecticides	3
28.	somniferous poisons	3
29.	inebriant poisons	3
30.	deliriant poisons	3
31.	spinal poisons	1
32.	cardiac poisons	1
33.	asphyxiants	2
34.	Food poisoning	1