

- Practicals I & II-(20+20) =40 marks(University)
- Internal assessment - 20 marks
- Aggregate : 200 marks
- Internal Assessment

Based on day to day performance assessed by daily evaluation, short examinations, tutorials, seminars, sessional examinations etc.

Theory – Pattern of Question paper - Two papers of three hours duration (50 marks each)

### **OBJECTIVE STRUCTURED PRACTICAL EXAMINATION (OSPE)**

**SPOTTERS : 10 Numbers**-Based on calculations, ,instruments,charts, microscopic slides of blood cells, graphs,(including graphs from systems,amphibian expts-skeletal muscle/cardiac muscle) clinical history,clinical skill)

#### **Seminars :**

Guide lines:

- Allot 8 topics for a day.
- Assign a single topic per student for presentation that lasts 10 minutes
- All the students should learn all the 8 topics to participate in the post test session (10 questions) after the presentation session
- Marks: 10 marks for presentation & 10 marks for post test  
Consider 10 % of this mark for internal assessment

List of Assignment topics and Seminar topics can be prepared by the department.  
Records should be maintained with marks assigned during internal assessment

### **FORENSIC MEDICINE AND TOXICOLOGY**

#### **GOAL**

The broad goal of the teaching of undergraduate students in Forensic medicine is to produce a physician who is well informed about medico legal responsibilities in practice of medicine. He/she acquire knowledge of law in relation to medical practice, medical negligence and respect for codes of medical ethics.

Learning objectives-

1. Be conversant with medical ethics, etiquette, duties rights and legal

responsibilities of the physician towards patients, profession, society, state and humanity at large and implications of medical negligence.

2. Be aware of relevant existing laws and procedures including the recent developments applicable to medical practice.
3. Identify, examine, document and prepare report/certificate in medico legal cases/situations in accordance with the law of the land.
4. Recognize and manage common medico legal problems including cases of poisoning in conformity with the medical procedure.
5. Perform medico legal postmortem examination and interpret the findings and results of other relevant investigations to logically conclude the cause, manner and time since death.
6. Preserve and dispatch specimens in medico legal/postmortem cases and other concerned materials to the appropriate government agencies for necessary examination.
7. Be aware of the general principles of environmental, occupational and preventive aspects of toxicology.

Period of study	-	III, IV and V Semester.	
Duration of training	-	18 months.	
Methods of instructions	-		
Lecture	-	30 hrs.	
Practicals and Innovative sessions		70 hrs.	
Total no of hours	-	100Hrs.	
	TOPIC	Method of teaching	Hours
	Forensic medicine	Lecture	1
1	Definition of forensic medicine, Forensic pathology and medical jurisprudence		
2	Introduction to the subject, historical aspects of forensic medicine.		
3	Inquest procedures	Lecture	3

4	Courts in India and their powers. Supreme court, High court, Sessions court, Assistant sessions court and Magistrate courts.	Innovative session  (Moot court) Practical	2
5	Court procedures. Summons, warrant, Conduct money, Oath/affirmation, Types of witnesses, Recording of evidence, Conduct of doctor in witness box, Perjury, Hostile witness.		2
6	Medical certificates and Medico legal reports. Birth, death, wound, drunkenness, potency, Sexual offence cases, intimation, notification.	Lecture	1
7	Death and Causes	Lecture	4
8	Definition, diagnosis and certification (as per MCCD rules), somatic, molecular and brain death. Sudden natural deaths, suspended animation.Changes after death. A) Algor mortis, Livor mortis, Rigor mortis, cadaveric spasm, cold stiffening, heat stiffening.	Practical demo.	4

	B) Decomposition, modified forms of decomposition, estimation of time since death. C) Common post mortem artifacts.		
	Identification	Lecture	1
	A Definition. B) Identification of persons, dead bodies and remains of a person by sex, age, biometry, dental features, scars, moles, tattoos, dactylography, personal belongings photography, super imposition, DNA.	Practical demo. Group discussion	2 2
10	Medico legal autopsy and exhumation.	Lecture	1
	A) Definition of medico legal and clinical/pathological autopsy. B) Objectives, procedures and formalities of medico legal autopsy. C) Preservation of articles and tissues of importance during autopsy.	Practical	6

11	Mechanical injuries or wounds.	Innovative	6
	A) Definition of wound, injury, hurt, assault, battery.	(Gp.discn.)	
	B) Classification of injuries, description of blunt force and sharp force injuries		
	C) Fire arms-principles, types. Examination and interpretation of fire arm wounds. Comparison microscopy.		
	D) Medico legal aspects of injuries: Difference between ante mortem and postmortem injuries, determination of different types of injuries, defense wounds, hesitation cuts, fabricated wounds, simple and grievous hurt, suicidal, accidental and homicidal injuries, causes of death by mechanical injuries, legal classification of fatal injuries.	Practical	6
	E) Regional injuries: Injuries to head, neck, thorax, abdomen, pelvis, genitalia, vertebral column and bones.		
	F) Injuries due to traffic occurrences.	Innovative	4
	G) Injuries due to physical agents and their medico legal importance: (Project) Heat, cold electricity and lightning. Explosion injuries.		

12.	Asphyxial deaths: Definition, causes, types, postmortem appearances and medico legal significance of violent-asphyxial deaths like hanging, strangulation, suffocation, smothering, choking, drowning, traumatic asphyxia.	Lecture       Innovative  (Gp.discn)	4       2
13	medico legal aspects of Deaths due to starvation-forced feeding.	Practical	4
	Human sexual functions:	Lecture	2
14	A). Potency, sterility, virginity, pregnancy, delivery. B) Abortion, MTP, sterilization, artificial insemination and their legal aspects. C) Sexual offences and abnormal sexual practices. D) Legal aspects of the above.	Lecture       Innovative  (Gp.discn)    Lecture	3       2    1   2

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18.	<p>Medical jurisprudence:</p> <p>A) Indian medical council and state medical councils, their functions and disciplinary control.</p> <p>B) Duties and rights and privileges of a registered medical practitioner.</p> <p>C) Professional conduct, etiquette and</p>	<p>Lecture</p> <p>Innovative</p> <p>(Gp.discn)</p> <p>Innovative</p>	<p>2</p> <p>2</p> <p>2</p> <p>2</p>
	<p>ethics in medical practice.</p> <p>Ethics underlying human interactions - Respect, Trust, confidentiality in doctor – patient relationship</p> <p>Cardinal Principles of medical ethics- Autonomy, Beneficence, Non-Maleficence, Justice</p> <p>Seminar – with case examples</p> <p>D) Professional secrecy and privileged communication.</p> <p>E) Medical negligence: Civil, criminal, contributory negligence, vicarious responsibility, res-ipsa-loquitur medica prevention of negligence and defence in medical negligence suits.</p> <p>F) Consent; Types, age in relation to consent, consent in relation to mental illness and alcohol intoxication,</p>	<p>Innovative</p> <p>(Seminar)</p>	



	consent in emergency situations. Informed Consent as a bond of trust between patient and the doctor. Empowering Autonomy through information sharing		
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19.	Forensic toxicology: Definition and general principles	Lecture	2
	A) of management of a case of poisoning.	Innovative  (Seminar)	5  4
	B) Medico legal duties of a doctor in poisoning a case of , preservation and dispatch of viscera for chemical analysis. Role of chemical examiner's laboratory and forensic science laboratory in brief.	Innovative	
	C) Diagnosis and principles of therapy and medico legal aspects of the following poisons, giving special emphasis to those of regional importance	Integration  Pharmacology	
	-a) Corrosive poisons: strong mineral acids, alkalies and organic acids-(carbolic, formic and oxalic acid).		
	b) Metallic poisons: Lead, Arsenic, Mercury		

<p>c) Animal poisons-snake and scorpion bites.</p> <p>d) Delirants: Dhatura, Cannabis and Cocaine.</p> <p>e) Inebriants: Methyl and Ethyl alcohol.</p> <p>f) Asphyxiants: Carbon monoxide, carbon dioxide, Hydrogen sulphide and Cyanides.</p> <p>g) Cardiac poisons: Cerbera odollam, Cerbera thevetia, Nerium odorum.</p> <p>h) Insecticides: Organophosphorous compounds, Carbamates and Organochloro compounds, Aluminium phosphide and Zinc phosphide.</p> <p>D) Drug abuse and dependence.</p> <p>E) Inorganic non metallic poisons: Phosphorous.</p> <p>F) Organic vegetable irritants: Abrus precatorius, capsicum, calotropis, Semicarpus anacardium, Croton.</p> <p>G) Convulsants: Strychnine.</p> <p>H) Paralytic agents: Curare.</p> <p>I) War gases and industrial gases.</p> <p>J) Chloral hydrate.</p> <p>K) Mechanical poisons.</p>	<p>Practical</p> <p>Innovative</p> <p>(Gp.discn)</p>	
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SKILLS	Level of achievement			
	Able to perform independent	Able to perform under guidance	Assist	Observe
1. Prepare certificates of birth and death.  Prepare death verification Differentiating Death verification and death certification			1	
2. Prepare dying declaration.			2	
3. Give evidence in court of law as expert witness.				3
4. Collect, preserve and properly label and dispatch specimens of medico legal importance.	4			
5. Diagnose and manage common acute and chronic poisoning.		5		
6. Perform medico legal duties in case of poisoning.		6		
7. Observe ten medico legal autopsies and enter in practical record.				7
8. Age estimation from bones, skiagrams and dentition	8			
9. Examination of injuries and weapons and report writing.	9			
10. Examination of an alcohol intoxicated person and report writing.	10			
11. Examination of victim and accused in sexual offence cases.	11			
12. Study of specimens of poisons.	12			
13. Study of wet and models, charts etc.dry specimens,	13			

**Suggested topics for integrated teaching**

1. Examination of injured person and report writing. Integration with surgery casualty posting.
2. Examination of victim of sexual assault cases and report writing. Integration with casualty management posting.
3. Forensic psychiatry. Integration with psychiatry posting.
4. Management of cases of poisoning. Integration with medicine.
5. Drug abuse and drug dependence. Integration with pharmacology.
6. Integrated learning of common ethical issues in clinical practice—eg informed consent, end of life, patient autonomy, distributive justice, non maleficence .
7. Medico legal issues in Clinical practice including casualty
8. Medical documentation and Medical records
9. Death due to anaphylaxis
10. Death in Hospitals(Anaesthetic/Surgical/Alleged negligence)

#### **Suggested topics for e-learning**

1. Ethical and medico legal issues in clinical practice. Examples for this topic in real life situations - Integrated learning with invited clinical faculty- giving actual patient examples of medico-legal dilemmas.
2. Child abuse.
3. POCSO Act
4. HIV/AIDS.
5. Torture medicine.
6. Lie detection.
7. Narco analysis.
8. Brain finger printing

#### **Prescribed books**

1. Practical Forensic medicine. B.Umadethan, CBS publishers & distributors.
2. Forensic Medicine and Toxicology, Dr.P.C. Ignatius.
3. Forensic medicine, P.V. Guharaj, 2nd Edition, University press.
4. Text book of Forensic medicine and Toxicology-principles and Practice, Krishan Vij, 4th Edition, Elsevier

#### **Reference books**

- 1 . Essentials of Forensic medicine and toxicology. K.S. Narayana Reddy, 29th Edition.
- 2 . Modis text book of Medical Jurisprudence and Toxicology, 23rd Edition, Lexis Nexis.

3. Text Book of Forensic medicine and Toxicology by Nagesh Kumar G.Rao, 2nd Edition. Jaypee brothers Medical Publishers
4. Principles and practice of Forensic medicine. Dr. B. Umadethan 2008, Swami Law Publishers.
5. Parikhs Text Book of Medical Jurisprudence, forensic medicine and Toxicology, 6th edition, CBS Publishers and Distributors.
- 7 J.B. Mukherjee's forensic medicine and Toxicology. R.N. Karmakar 2007.

### Evaluation

Internal assessment examinations may be conducted as per the discretion. examination per semester, without violating MCI norms. : Minimum one

<b>Theory</b>	<b>40</b>
Internal assessment	10
Viva	10
Total	60
<b>Practicals</b>	<b>30</b>
Intrenal Assessment	10
Total	40
<b>Grand Total</b>	<b>100</b>

### Topics and mark allotment

Medical jurisprudence (Ethics to be given due importance)	20%
Court and legal procedures	10%
Thanatology, M/L autopsy	8%
Asphyxial deaths	10%
Traumatology	10%
Sexual jurisprudence	20%
Infanticide	10%
Trace evidences	5%
Forensic psychiatry	2%
Toxicology	5%

## MICROBIOLOGY

### A. GOAL

The broad goal of the teaching of undergraduate students in Microbiology is to provide an understanding of the natural history of infectious diseases in order to deal with the etiology, pathogenesis, laboratory diagnosis, treatment and control of infections in the