



MGM INSTITUTE OF HEALTH SCIENCES

Accredited by NAAC with 'A' Grade

(Deemed University u/s 3 of UGC Act, 1956)

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COMPETENCY BASED MEDICAL EDUCATION (CBME)

(With effect from 2019-20 Batches)

Curriculum for Second M.B.B.S

Forensic Medicine and Toxicology

Approved as per BOM -57/2019, [Resolution No. 3.1.2.2], Dated 26/04/2019

Dr. Rajesh B. Goel
Registrar

MGM Institute of Health Sciences
(Deemed University u/s 3 of UGC Act, 1956)
Navi Mumbai- 410 209

Handwritten:
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IInd MBBS CBME Curriculum

Forensic Medicine & Toxicology

	Lectures	Small Group Teaching / Tutorials / Integrated teaching / Seminars / Practicals	Self Directed Learning Hours	Total
Forensic Medicine & Toxicology (FMT)	15	30	05	50

Competency No.	The student should be able to	Teaching Method	Lecture Topics	No. of Hours
General Information Number of Competencies: (11) Number of Procedures that require certification: (Nil)				
FM1.1	Demonstrate knowledge of basics of Forensic Medicine like definitions of Forensic medicine, Clinical Forensic Medicine, Forensic Pathology, State Medicine, Legal Medicine and Medical Jurisprudence.	Lecture	Introduction to FMT	L-1
FM1.2	Describe history of Forensic Medicine			
FM1.3	Describe legal procedures including Criminal Procedure Code, Indian Penal Code, Indian Evidence Act, Civil and Criminal Cases, Inquest (Police Inquest and Magistrate's			

	Inquest), Cognizable and Non-cognizable offences	Lecture	Legal Procedure	L-2
FM1.4	Describe Courts in India and their powers: Supreme Court, High Court, Sessions court, Magistrate's Court, Labour Court, Family Court, Executive Magistrate Court and Juvenile Justice Board			
FM1.5	Describe Court procedures including issue of Summons, conduct money, types of witnesses, recording of evidence oath, affirmation, examination in chief, cross examination, re-examination and court questions, recording of evidence & conduct of doctor in witness box	Lecture	Legal Procedure	L-3
FM1.6	Describe Offenses in Court including Perjury; Court strictures vis-a vis Medical Officer	Small Group Discussion	Legal Procedure	S - 1
FM1.7	Describe Dying Declaration & Dying Deposition		Legal Procedure	
FM1.8	Describe the latest decisions / notifications / resolutions / circulars / standing orders related to medico-legal practice issued by Courts / Government authorities etc.		Legal Procedure	

FM1.9	<p>Describe the importance of documentation in medical practice in regard to medico-legal examinations, Medical Certificates and medico-legal reports especially</p> <ul style="list-style-type: none"> - Maintenance of patient case records, discharge summary, prescribed registers to be maintained in Health Centres. - Maintenance of medico-legal register like accident registers. - documents of issuance of wound certificate - documents of issuance of drunkenness certificate - documents of issuance of sickness and fitness certificate. - documents for issuance of death certificate. - documents of Medical Certification of Cause of Death - Form Number4 and 4A - documents for estimation of age by physical, dental and radiological examination and insurance of certificate 	Small Group Discussion	Legal Procedure	S-2
FM1.10	Select appropriate cause of death in a particular scenario by referring ICD 10 code	Practical	Legal Procedure	Pract.-1
FM1.11	Write a correct cause of death certificate as per ICD 10 document		Legal Procedure	
<p>Topic: Forensic Pathology Number of competencies: (35) Number of procedures that require certification : (NIL)</p>				
FM2.1	Define, describe and discuss death and its types including somatic/clinical/cellular, molecular and brain-death, Cortical Death and Brainstem Death	Lecture	Death & its causes	

FM2.2	Describe and discuss natural and unnatural deaths	Lecture	Death & its causes	L-4
FM2.3	Describe and discuss issues related to sudden natural deaths	Lecture	Death & its causes	
FM2.4	Describe salient features of the Organ Transplantation and The Human Organ Transplant (Amendment) Act 2011 and discuss ethical issues regarding organ donation	Small Group Discussion	Medical Ethics & Laws	S-3
FM2.5	Discuss moment of death, modes of death - coma, asphyxia and syncope	Lecture	Death & its causes	L-4
FM2.6	Discuss presumption of death and survivorship	Lecture	Death & its causes	
FM2.7	Describe and discuss suspended animation	Small Group Discussion	Post Mortem Changes	S-4
FM2.8	Describe and discuss postmortem changes including signs of death, cooling of body, post-mortem lividity, rigor mortis, cadaveric spasm, cold stiffening and heat stiffening	Small Group Discussion	Post Mortem Changes	DOAP -1
FM2.9	Describe putrefaction, mummification, adipocere and maceration	Small Group Discussion	Post Mortem Changes	SDL -1
FM2.10	Discuss estimation of time since death	Small Group Discussion	Post Mortem Changes	S-4

FM2.11	Describe and discuss autopsy procedures including post-mortem examination, different types of autopsies, aims and objectives of post-mortem examination	Lecture	Medicolegal Autopsy	L-5
FM2.12	Describe the legal requirements to conduct post-mortem examination and procedures to conduct medico-legal post-mortem examination	Lecture	Medicolegal Autopsy	L-5
FM2.13	Describe and discuss obscure autopsy	Lecture	Medicolegal Autopsy	L-5
FM2.14	Describe and discuss examination of clothing, preservation of viscera on post-mortem examination for chemical analysis and other medico-legal purposes, post-mortem artifacts	Lecture	Medicolegal Autopsy	L-5
FM 2.15	Describe special protocols for conduction of medico-legal autopsies in cases of death in custody or following violation of human rights as per National Human Rights Commission Guidelines	Small Group Discussion	Medicolegal Autopsy	S-5
FM2.16	Describe and discuss examination of mutilated bodies or fragments, charred bones and bundle of bones	Small Group Discussion	Medicolegal Autopsy	S-6
FM2.17	Describe and discuss exhumation	Small Group Discussion	Medicolegal Autopsy	S-6
FM2.18	Crime Scene Investigation:- Describe and discuss the objectives of crime scene visit, the duties & responsibilities of doctors on crime scene and the reconstruction	Lecture	Medicolegal Autopsy	L-6

	of sequence of events after crime scene investigation			
FM2.19	Investigation of anesthetic, operative deaths: Describe and discuss special protocols for conduction of autopsy and for collection, preservation and dispatch of related material evidences	Small Group Discussion	Anesthetic & operative deaths	S-7
FM2.20	Mechanical asphyxia: Define, classify and describe asphyxia and medico-legal interpretation of post-mortem findings in asphyxial deaths	Lecture	Asphyxia	L-7
FM2.21	Mechanical asphyxia: Describe and discuss different types of hanging and strangulation including clinical findings, causes of death, post-mortem findings and medico-legal aspects of death due to hanging and strangulation including examination, preservation and dispatch of ligature material	Lecture + Autopsy	Asphyxia	L-7
FM2.22	Mechanical asphyxia: Describe and discuss patho-physiology, clinical features, postmortem findings and medico-legal aspects of traumatic asphyxia, obstruction of nose & mouth, suffocation and sexual asphyxia	Lecture	Asphyxia	L-8
FM2.23	Describe and discuss types, patho-physiology, clinical features, postmortem findings and medico-legal aspects of drowning, diatom test and, Gettler test.	Lecture	Asphyxia	L-8
FM2.24	Thermal deaths: Describe the clinical features, post-mortem finding and medico-legal aspects of injuries due to physical agents like heat (heat-hyper-pyrexia, heat stroke, sun stroke, heat exhaustion/prostration, heat cramps [miner's cramp] or cold (systemic and localized hypothermia, frostbite, trenchfoot, immersion foot)	Lecture	Thermal Injuries	L-9

FM2.25	Describe types of injuries, clinical features, patho-physiology, postmortem findings and medico-legal aspects in cases of burns, scalds, lightening, electrocution and radiations	Lecture	Thermal Injuries	L-9
FM2.26	Describe and discuss clinical features, post-mortem findings and medico-legal aspects of death due to starvation and neglect	Small Group Discussion	Starvation	SDL-2
FM2.27	Define and discuss infanticide, foeticide and stillbirth	Lecture	Infanticide	L-10
FM2.28	Describe and discuss signs of intrauterine death, signs of live birth, viability of foetus, age determination of foetus, DOAP session of ossification centres, Hydrostatic test, Sudden Infants Death syndrome and Munchausen's syndrome by proxy	Small Group Discussion	Infanticide	S-8
FM2.29	Demonstrate respect to the directions of courts, while appearing as witness for recording of evidence under oath or affirmation, examination in chief, cross examination, re-examination and court questions, recording of evidence	Moot Court	Legal procedure	S-9
FM2.30	Have knowledge/awareness of latest decisions / notifications / resolutions / circulars / standing orders related to medico-legal practice issued by Courts / Government authorities etc	Small Group Discussion	Recent updates	S-10
FM2.31	Demonstrate ability to work in a team for conduction of medico-legal autopsies in cases of death following alleged negligence medical dowry death, death in custody or following violation of human rights as per National Human Rights Commission Guidelines on exhumation	Lecture	Medical ethics and law	L-11
FM2.32	Demonstrate ability to exchange information by verbal, or nonverbal communication to the peers, family members, law enforcing agency and judiciary	Lecture	Medical ethics and law	L-11
FM2.33	Demonstrate ability to use local resources			L-12

	whenever required like in mass disaster situations	Lecture	Mass disaster	
FM2.34	Demonstrate ability to use local resources whenever required like in mass disaster situations	Lecture	Mass disaster	L-12
FM2.35	Demonstrate professionalism while conducting autopsy in medicolegal situations, interpretation of findings and making inference/opinion, collection preservation and dispatch of biological or trace evidences	Small Group Discussion	Medicolegal Autopsy	DOAP-2
<p>Topic: Clinical Forensic Medicine Number of competencies:(33) Number of procedures that require certification: (NIL)</p>				
FM3.1	IDENTIFICATION Define and describe Corpus Delicti, establishment of identity of living persons including race, Sex, religion, complexion, stature, age determination using morphology, teeth-eruption, decay, bite marks, bones-ossification centres, medico-legal aspects of age	Lecture	Identification	L-13
FM3.2	IDENTIFICATION Describe and discuss identification of criminals, unknown persons, dead bodies from the remains-hairs, fibers, teeth, anthropometry, dactylography, foot prints, scars, tattoos, poroscopy and superimposition	Lecture	Identification	L-13
FM3.3	Mechanical injuries and wounds: Define, describe and classify different types of mechanical injuries, abrasion, bruise, laceration, stab wound, incised wound, chop wound, defense wound, self-inflicted/fabricated wounds and their medico-legal aspects	Lecture	Mechanical injury	L-14
FM3.4	Mechanical injuries and wounds: Define injury,			

	assault & hurt. Describe IPC pertaining to injuries	Lecture	Mechanical injury	L-14
FM3.5	Mechanical injuries and wounds: Describe accidental, suicidal and homicidal injuries. Describe simple, grievous and dangerous injuries. Describe ante-mortem and post-mortem injuries	Lecture	Mechanical injury	L-14
FM3.6	Mechanical injuries and wounds: Describe healing of injury and fracture of bones with its medico-legal importance	Lecture	Mechanical injury	L-14
FM3.7	Describe factors influencing infliction of injuries and healing, examination and certification of wounds and wound as a cause of death: Primary and Secondary	Small Group Discussion	Mechanical injury	S-11
FM3.8	Mechanical injuries and wounds: Describe and discuss different types of weapons including dangerous weapons and their examination	Practical	Mechanical injury	Pract.-2
FM3.9	Firearm injuries: Describe different types of firearms including structure and components. Along with description of ammunition propellant charge and mechanism of fire-arms, different types of cartridges and bullets and various terminology in relation of firearm – caliber, range, choking	Small Group Discussion	Mechanical injury	SDL -3
FM3.10	Firearm injuries: Describe and discuss wound ballistics-different types of firearm injuries, blast injuries and their interpretation, preservation and dispatch of trace evidences in cases of firearm and blast injuries, various tests related to confirmation of use of firearms	Small Group Discussion	Mechanical injury	SDL - 4
FM3.11	Regional Injuries:			

	Describe and discuss regional injuries to head (Scalp wounds, fracture skull, intracranial haemorrhages, coup and contrecoup injuries), neck, chest, abdomen, limbs, genital organs, spinal cord and skeleton	Lecture	Regional injury	L-15
FM3.12	Regional Injuries Describe and discuss injuries related to fall from height and vehicular injuries – Primary and Secondary impact, Secondary injuries, crush syndrome, railway spine	Lecture	Regional injury	L-15
FM3.13	Describe different types of sexual offences. Describe various sections of IPC regarding rape including definition of rape (Section 375 IPC), Punishment for Rape (Section 376 IPC) and recent amendments notified till date	Small Group Discussion	Sexual offences	S-12
FM3.14	SEXUAL OFFENCES Describe and discuss the examination of the victim of an alleged case of rape, and the preparation of report, framing the opinion and preservation and despatch of trace evidences in such cases	Practical	Sexual offences	Pract.-3
FM3.15	SEXUAL OFFENCES Describe and discuss examination of accused and victim of sodomy, preparation of report, framing of opinion, preservation and dispatch of trace evidences in such cases	Practical	Sexual offences	Pract.-4
FM3.16	SEXUAL OFFENCES Describe and discuss adultery and unnatural sexual offences sodomy, incest, lesbianism, buccal coitus, bestiality, indecent assault and preparation of report, framing the opinion and preservation and despatch of trace evidences in such cases	Seminar-	Sexual Offences	Seminar-1
FM3.17	Describe and discuss the sexual perversions fetishism, transvestism, voyeurism, sadism, necrophagia, masochism, exhibitionism,	Small Group Discussion	Sexual Offences	SDL-5

	frotteurism, Necrophilia			
FM3.18	Describe anatomy of male and female genitalia, hymen and its types. Discuss the medico-legal importance of hymen. Define virginity, defloration, legitimacy and its medicolegal importance	Small Group Discussion	Virginity	S-13
FM3.19	Discuss the medicolegal aspects of pregnancy and delivery, signs of pregnancy, precipitate labour superfoetation, superfecundation and signs of recent and remote delivery in living and dead	Lecture	Pregnancy and delivery	Integrated -1
FM3.20	Discuss disputed paternity and maternity	Seminar	Pregnancy and delivery	Seminar - 2
FM3.21	Discuss Pre-conception and Pre Natal Diagnostic Techniques (PC&PNDT) - Prohibition of Sex Selection Act 2003 and Domestic Violence Act 2005	Seminar	Pregnancy and delivery	Seminar - 3
FM3.22	Define and discuss impotence, sterility, frigidity, sexual dysfunction, premature ejaculation. Discuss the causes of impotence and sterility in male and female	Lecture	Impotence and sterility	Integrated -2
FM3.23	Discuss Sterilization of male and female, artificial insemination, Test Tube Baby, surrogate mother, hormonal replacement therapy with respect to appropriate national and state laws	Lecture	Impotence and sterility	Integrated -3
FM3.24	Discuss the relative importance of surgical methods of contraception (vasectomy and tubectomy) as methods of contraception in the National Family Planning Programme	Lecture	Impotence and sterility	Integrated-4
FM3.25	Discuss the major results of the National Family Health Survey	Lecture	Impotence and sterility	Integrated-5
FM3.26	Discuss the national Guidelines for accreditation, supervision & regulation of ART Clinics in India	Lecture	Impotence and sterility	Integrated-6

FM3.27	Define, classify and discuss abortion, methods of procuring MTP and criminal abortion and complication of abortion. MTP Act 1971	Lecture	Abortion	Integrated-7
FM3.28	Describe evidences of abortion - living and dead, duties of doctor in cases of abortion, investigations of death due to criminal abortion	Lecture	Abortion	Integrated-8
FM3.29	Describe and discuss child abuse and battered baby syndrome	Small Group Discussion	Infanticide	S-14
FM3.30	Describe and discuss issues relating to torture, identification of injuries caused by torture and its sequelae, management of torture survivors	Small Group Discussion	Medicolegal Aspect of Injuries	S-15
FM3.31	Torture and Human rights Describe and discuss guidelines and Protocols of National Human Rights Commission regarding torture	Small Group Discussion	Medicolegal Aspect of Injuries	S-15
FM3.32	Demonstrate the professionalism while preparing reports in medicolegal situations, interpretation of findings and making inference/opinion, collection preservation and dispatch of biological or trace evidences	Small Group Discussion	Legal procedure	S-16
FM3.33	Should be able to demonstrate the professionalism while dealing with victims of torture and human right violations, sexual assaults psychological consultation, rehabilitation	Small Group Discussion	Medical ethics and laws	S-15

Resolution No. 3.2.2.1 of BOM-62/2020: Resolved to approve the restructured Formative and Summative assessment pattern for 2nd MBBS Para-Clinical disciplines (Microbiology, Pathology, Pharmacology and FMT) which is in line with Competency Based Medical Education (CBME) curriculum guidelines as mandated by MCI. [**Annexure-46A, 46B, 46C, 46D**]

Formative Assessment

Theory Portion (1st Internal Assessment)

50 Marks

- Introduction, general /history
- Identification- Estimation of age
- Age of foetus
- Death
- Signs of death
- Changes after death
- Time since death

Practical Portion (1st Internal Assessment)

50 Marks

- Estimation of age Bone age/ Teeth / Secondary sexual characteristic
- Age of foetus
- MCCD—certifications

Theory Portion (2nd Internal Assessment)

50 Marks

- Evidences- types
- Examination of stains
- Trace evidence
- Wet specimen
- Photograph
- X Rays
- Bones
- Weapons

Practical Portion (2nd Internal Assessment)

50 Marks

- Evidences- types
- Examination of stains
- Photograph
- X Rays
- Bones
- Weapons

Formative Exam – Theory, Time – 2 Hours

First and Second Formative Exam (Second Professional Year)					
	Section "A"	Section "B"	Section "C"	Section "D"	Total
	MCQ	SAQ	LAQ	Essay / Short Note /Recent advances / Opinion from	

Theory	0.5 Mark X20 (Compulsory)	5 Mark X 4 out of 5	10 Mark X 1 out of 2	given data /Situation with reasons /Problem based Question 10 Marks X 1 (Compulsory)	
Marks	10	20	10	10	50

First and 2nd Formative Exam – Practical (Second Professional Year)	
Practical Heads	Marks
Exercises	20
<ul style="list-style-type: none"> • Prepare Injury Report from given data or Prepare Age Estimation from given data 	05
<ul style="list-style-type: none"> • Prepare MCCD from given data 	05
<ul style="list-style-type: none"> • Prepare Determination of age of Foetus 	05
<ul style="list-style-type: none"> • Prepare Sickness or Fitness Certificate 	05
Spotters OSCE – 05 - Slides	
<ul style="list-style-type: none"> • (Sperm / Blood Stain / Hair/ Fiber), Histopathology Slides, Photographs, X-rays, Instruments / Equipments, Models, Bones, Weapons, Documents, Specimens, Pathological / Biochemical Tests 	10

Viva- Voce (10 marks X 2 Tables)	20
Total	50

Time: 1 Hour for all Exercises,

2 Minute each for each Spotter station,

10 Minute at each table Viva

Resolution No.3.1.2.3 of BOM-59/2019: The updated list of Text books and Reference books for 2nd MBBS (Microbiology, Pharmacology, Pathology, FMT) are approved. [**Annexure-8**]

(To be merged with syllabus i.e. Annexure-69 of BOM-57/2019 dt.26/04/2019)

Recommended books

Text Books:

1. Modi's Text book of Medical Jurisprudence & Toxicology.
2. The Essentials of Forensic Medicine & Toxicology: K.S.N. Reddy.
3. Textbook of Forensic Medicine: JB. Mukharjee.
4. Principles of Forensic Medicine: A. Nandy.
5. Textbook of Forensic Medicine & Toxicology, Principles & Practice: Krishan Vij

Reference Books

1. Forensic Pathology by Bernard Knight
2. Handbook of Forensic Pathology by Vincent DiMaio & Suzanna E. Dana
3. Keith Simpson's Forensic Medicine.
4. Ross's post mortem Appearances
5. Forensic medicine-a guide to principle by Gordon & Shapiro
6. Forensic Medicine: A study in trauma & Environmental Hazards by Tedesch

For Additional Reading

1. "Informed consent in Medical Practice principles & conventions". Dr. Kalidas Chavan & Dr. Rajendra Banjal- Publishers: Jaypee Brothers, Mumbai.
2. The Making of A Doctor' R.S.Downie . Charlin Calmam 1992
3. 'The Medical Teacher' by Ken Cox Christine Ewan. 2nd edition 1988