



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Forensic Science

Choice Based Credit System (CBCS)

B.Sc. With Major Forensic Science- Batch (2023-2027)

SEMESTER VI

BFS601 MEDICAL JURISPRUDENCE

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME									
			THEORY			PRACTICAL		Assessment*	L	T		
			END SEM	University Exam	Two Term Exam	Teachers	END SEM	University Exam				
BFS601	Major Core 1	Medical Jurisprudence	60	20	20		60	40	4	0	4	6

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

*Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives: After studying this paper the students will know –

1. Fundamental aspects of forensic medicine
2. Somatic, Cellular and Molecular Death.
3. Forensic Taphonomy

Course Outcomes:

1. The steps involved in processing the death scene.
2. Examine the changes occurring in body after death assisting to reach on conclusion providing Scientific fact about changes occurring after death.
3. Interpretation of different type of Injuries and Asphyxial Deaths.

Unit 1: Introduction to Forensic Medicine

Fundamental aspects and scope of forensic medicine. , Approaching the crime scene of death. Obtaining first-hand information from the caller. Rendering medical assistance to the victim, if alive. Protecting life. Inquest: Inquest by police, magistrate Medical certification and medico-legal reports including dying declaration.

Unit 2: Death

Definition, Types: Somatic, Cellular and Brain-Death. Mode of death: Asphyxia, Syncope, Coma Sudden natural and unnatural deaths. Suspended animation.

Unit 3: Forensic Taphonomy (Postmortem Changes)

Immediate Changes: Insensibility and loss of voluntary power, Cessation of respiration.

Early Changes: cooling of body, lividity, rigor mortis, cadaveric spasm, cold stiffening and heat stiffening. **Late Changes (Decomposition and decay):** Putrefaction, mummification, adipocere and maceration, Postmortem artifacts.

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Unit 4: Medico-legal autopsies

SEMESTER VI

Definitions of medico-legal and clinical/pathological autopsies. Objectives, procedures, formalities of medico-legal autopsies. Preservation of articles of importance, during autopsy. Preservation of body fluids & viscera in suspected poisoning.

Unit 5: Mechanical injuries or wounds

Definition, classification of mechanical injuries; description of blunt force, sharp force and firearm injuries. Medico-legal aspects of injuries, differences between antemortem and post-mortem injuries, estimation of age of different types of injuries, defense injuries, hesitation cuts; fabricated injuries; simple and grievous hurt, suicidal/accidental/homicidal injuries; causes of death by mechanical injuries. Identification of injuries by torture.

List of Practicals:

1. To design a questionnaire for the first responder to the death scene.
2. To design a checklist for the forensic scientists at the death scene.
3. To design a canvass form giving description of an unidentified victim.
4. Practical aspects of collection, preservation and dispatch of viscera for chemical analysis
5. To give the demonstration of postmortem and ante-mortem wound.
6. Examination of certification of injuries.

Suggested Readings:

1. K. Smyth, The Cause of Death, Van Nostrand and Company, New York (1982).
2. M. Bernstein, Forensic odontology in, Introduction to Forensic Sciences, 2nd Ed., W.G. Eckert (Ed.), CRC Press, Boca Raton (1997).
3. J. Dix, Handbook for Death Scene Investigations, CRC Press, Boca Raton (1999).
4. H.B. Baldwin and C.P. May in, Encyclopedia in Forensic Science, Volume 1, J.A. Siegel, P.J. Saukko and G.C. Knupfer (Eds.), Academic Press, London (2000).
5. V.J. Geberth, Practical Homicide Investigation, CRC Press, Boca Raton (2006).
6. T. Bevel and R.M. Gardner, Bloodstain Pattern Analysis, 3rd Edition, CRC Press, Boca Raton (2008).
7. W.J. Tilstone, M.L. Hastrup and C. Hald, Fisher's, Techniques of Crime Scene Investigation, CRC Press, Boca Raton (2013).
8. Forensic Taphonomy, edited by Woudiam D. Haglernd, Marculla H. Sorg; CRC Press, LLC, 1997. 14. Glaister (Ed)-Rentoul & Smith (1973) :
9. Forensic Medicine & Toxicology, Churchill Livingston, Edinburgh.
10. Modi, J.K. (1988): Medical Jurisprudence & Toxicology

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SEMESTER VI

BFS602 FORENSIC TOXICOLOGY

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								CREDITS		
			THEORY			PRACTICAL		END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*	
			L	T	P								
BFS602	DSE I	Forensic Toxicology	60	20	20	30	20	3	0	2	4		

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.**

Course Objectives: After studying this paper the students will know –

1. The classification of poisons and their modes of actions.
2. The absorption of poisons in body fluids.
3. The medico legal aspects of several poisons i.e. Metallic poison, Plant poison, Animal Poison etc.
4. The classification and characteristics of the narcotics, drugs and psychotropic substances.
5. The menace of designer drugs.

Course Outcomes:

1. Student will be able to understand the the role of Forensic Toxicologist.
2. Student will be able to know the significance of toxicological examination.
3. Student will get the knowledge about the classification of poisons and their mode of actions.
4. Student will be able to know the lethal dose, lethal period of different types of poisons.
5. Student will be able to get information about the poisonous plants and animal poison a and their sign and symptoms.

Unit 1: Fundamentals of Forensic Toxicology

Introduction, Role of the toxicologist, significance of toxicological findings. Poison- definition and classification on the basis of their origin, physiological action and chemical nature. Metabolism and excretion of poisons, poisoning in India.

Unit 2: Management of Toxicological cases

Signs and symptoms of common poisons. Collection and preservation of viscera, blood and urine for various types of poisons: Choice of preservatives, containers and storage. Extraction, Isolation, Identification, Estimation of poisons from Viscera, Blood and Urine.

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Unit 3: Principles of therapy and medico-legal aspects of several poisons I

Corrosive poisons: strong mineral acids and organic acids. Metallic poisons: Lead, Arsenic, Mercury and Copper. Animal poisons: Snake and scorpion bites. Plant Poisons: Datura, Cannabis, Opium.

Unit 4: Principles of therapy and medico-legal aspects of several poisons II

Inebriants: Methyl and ethyl alcohol. Asphyxiant poisons: Carbon monoxide, Carbon dioxide, Methane and cyanides. Anesthetic agents. Miscellaneous: Aspirin, Paracetamol, Barbiturates, Diazepam, Antihistaminics, Antidepressants and kerosene oil.

Unit 5: Narcotics, Drugs and Psychotropic Substances

Definition of narcotics, drugs and psychotropic substances. Broad classification – Narcotics, stimulants, depressants and hallucinogens. General characteristics and common example of each classification. Designer drugs, Clandestine drug laboratories, Drugs and driving, Dope tests.

Practicals:

1. To identify biocides.
2. To identify metallic poisons.
3. To identify organic poisons.
4. To identify ethyl alcohol.
5. To identify methyl alcohol.
6. To carry out quantitative estimation of ethyl alcohol.
7. To identify drugs of abuse by spot tests.
8. To perform color tests for barbiturates.
9. To separate drugs of abuse by thin layer chromatography.

Suggested Readings:

1. R. Saferstein, *Criminalistics*, 8th Edition, Prentice Hall, New Jersey (2004).
2. F.G. Hofmann, *A Handbook on Drug and Alcohol Abuse*, 2nd Edition, Oxford University Press, New York (1983).
3. S.B. Karch, *The Pathology of Drug Abuse*, CRC Press, Boca Raton (1996).
4. A. Poklis, *Forensic toxicology in, Introduction to Forensic Sciences*, 2nd Edition, W.G. Eckert (Ed.), CRC Press, Boca Raton (1997).
5. A.W. Jones, Enforcement of drink-driving laws by use of per se legal alcohol limits: Blood and/or breath concentration as evidence of impairment, *Alcohol, Drug and Driving*, 4, 99 (1988).
6. W.J. Tilstone, M.L. Hastrup and C. Hald, *Fisher's, Techniques of Crime Scene Investigation*, CRC Press, Boca Raton (2013).
7. Modi's *Medical Jurisprudence and Toxicology*, 23 rd Edition, Edited by K. Mathiharan and A.K. Patnaik, Eastern Book Company, Lucknow.

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			THEORY			PRACTICAL			L	T	P	
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*	Teachers Assessment*				
BFS603	DSE II	Accident Investigation	60	20	20	30	20	3	0	2	4	

BFS603 ACCIDENT INVESTIGATION

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

*Teacher Assessment shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks

Course Objectives: After studying this paper the students will know-

1. Different elements of motor vehicle accidents
2. Analysis of accidental cases
3. Different types of injuries in accidents
4. Significance of Tachographs
5. Mass disasters and their types

Course Outcomes:

1. The significance of photographs in accident cases.
2. The importance of trace evidences
3. The consequences of Accident analysis
4. Significance of Tachographs

Unit 1: Motor Vehicle Accidents

Accident scene, Sources of information, Eyewitness accounts, Extent of vehicle damage. Visibility conditions. Photographs of accident site. Estimation of speed. Tire marks, skid marks, scuff marks. Maintenance of vehicles. Abandoned vehicles. Importance of air bags.

Unit 2: Accident Analysis

Pre-crash movement. Post-crash movement. Collision model. Gauging driver's reaction. Occupant's kinematics. Hit and investigations, Trace evidence at accident sites.

Unit 3 Injuries in Accidents

Types of injuries resulting from accident. Biomechanics of injuries, Psychological impact of severe injury. Patterns of injury in motor vehicle accident-Head injury, Spinal injury. Blunt cervical vascular injuries. Thoracic injury, Aortic injuries, Blunt cardiac injury. Blunt tracheobronchial injuries. Diaphragmatic injuries. Abdominal injury, Extremity injury, Pedestrian injury .

Unit 4: Tachographs

Forensic significance of tachograph data. Tachograph charts. Principles of chart analysis. Accuracy of speed record. Tire slip effects. Falsification and diagnostic signals. Route tracing

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Unit 5: Mass Disasters

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Introduction to mass disasters, types of mass disasters- natural and accidental, Investigation in cases of mass disasters, Disaster Victim Identification (DVI) in such cases, different types of accidental mass disasters- aircraft crash, railway accident, leakage of toxic gases, bridge collapse, building collapse etc.

Practicals:

1. Examination of Skid marks.
2. Examination of Scuff marks.
3. Examination of head lamp (tungsten filament)
4. Analysis of glass fractures in hit and run cases
5. Examination of Tyres and tread marks
6. Examination of paint chips

Suggested Readings:

1. T.S. Ferry, Modern Accident and Analysis, Wiley, New York (1988).
2. D. Lowe, The Tachograph, 2nd Edition, Kogan Page, London (1989).
3. T.L. Bohan and A.C. Damask, Forensic Accident Investigation: Motor Vehicles, Michie Butterworth, Charlottesville (1995).
4. S.C. Batterman and S.D. Batterman in Encyclopedia of Forensic Sciences. Volume 1, J.A. Siegel, P.J. Saukko and G.C. Knupfer (Eds.), Academic Press, London (2000).

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SEMESTER VI

BFS604 Internship

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BFS604	Internship	Internship	0	0	0	75	25	0	0	12	6

Every student must complete an internship at any reputable scientific laboratory or institute, under the supervision of the Supervisor. He or she will present institution's certificate indicating that he or she attended the internship at their institute. Every student will be required to present their internship report during the seminar before the external examiner.

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