



SCHOOL OF STUDIES IN FORENSIC SCIENCE  
VIKRAM UNIVERSITY, UJJAIN (M.P.)



M.Sc. FORENSIC SCIENCE  
(1 Year Program)

This Scheme is based on the ORDINANCE -14 (2) PRINCIPLE (13/05/2025), of M.P Higher Education Ministry and UGC Guidelines of NEP 2020

w.e.f. Session 2025-2026

Credit Distribution Overview

SEMESTER - I (CREDITS 22)

S.No.	Paper code	Course Component and Name of paper	Credit			Marks		Total Marks
			T	P	Total	Max. Int.	Max. Ext.	
1.	FSC-CC- 31	Forensic Biology, Serology, DNA and Forensic Medicine: Theory	6	-	10	40	60	100
2.	FSC-PC- 31	Forensic Biology, Serology, DNA and Forensic Medicine: Practical	-	4		40	60	100
3.	FSC-CC- 32	Forensic Chemistry Toxicology and Pharmacology: Theory	6	-	10	40	60	100
4.	FSC-PC- 32	Forensic Chemistry Toxicology and Pharmacology: Practical	-	4		40	60	100
5.		Seminar	2	-	2	40	60	100
		Total Credits and Marks			22			500

\*Abbreviations Used- Core (Major), Minor, MD: Multi/Inter-Disciplinary, AEC: Ability Enhancement, SEC: Skill Enhancement, DSE: Discipline Specific Elective, VOC: Vocational Course, VAC: Value Added Course.

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Theory Paper: Scheme B-1 for one year PG program			
Program	Class: M.Sc. I semester	Year: 2025	Session: 2025-26
<b>Subject: Forensic Science</b>			
1	Course Code	FSC-CC- 31	
2	Course Title	Forensic Biology, Serology, DNA and Forensic Medicine: Theory	
3	Course Type		
4	Pre-Requisite (if any)		
5	Course Learning Outcome (CLO)	To understanding of the nature and importance of cells in the human body and different biological materials and their examination also importance of autopsy, knowledge on different types of injury and wound, the different techniques of facial reconstruction and their forensic importance, importance of forensic Medicine.	
6	Credit Value	6	
7	Total Marks	<b>Max. Marks: 100</b>	<b>Minimum Passing Marks: 40</b>

Total No. Of Lectures-Tutorial-Practical (in hours per week): L-T-P:

Unit	Topics	No. Of Lectures
	Definition, Meaning, and History of Histology. Cell: Definition, Theories, Classification and Significance of Cells in Forensic Science. Cell Organelles and their Functions, Difference between Eukaryotic and Prokaryotic Cell, Difference between Plant and Animal Cell. Cell Division: Definition, Types, Difference between Somatic, Germinal Cell, Totipotency and Apoptosis. Basic Concept in Brief for Anatomy and Physiology of Digestive, Respiratory, Circulatory, Skeleton, Nervous, Excretory, and Reproductive System, etc. Definition, Classification, General Properties of amin acids, proteins and carbohydrates.	14
I	History, Biochemistry and Genetics of ABO, Rh, Mn, and other Systems, Methods of ABO Blood Grouping (Absorption-Inhibition, Mixed Agglutination, And Absorption Elution) from Blood Stains and other Body Fluids/Stains, Determination of Secretor/Non-Secretor Status, Lewis Antigen, Bombay. Blood Spatter Pattern Identification, Identification of Menstrual and Other Stains by Various Methods. Semen: Composition, Structure of Spermatozoa, Forensic	22

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	Methods of Detection and Identification of Semen and Seminal Stain. Origin of Species: Determination of Human and Animal Origin from Bones, Hair, Flesh, Nails, Skin, Teeth, Body Tissue, Fluids/Stains viz. Blood, Menstrual Blood, Semen, Saliva, Sweat, Tear, Pus, Vomit, etc., Through Immuno-Diffusion and Immuno-Electrophoresis, Cross Reactivity among Closely Related Species. Immunology: Immune System, Immune Response, Epitopes, Paratopes, Haptens and Adjuvant, Antigens and Antibodies, Antigen-Antibody Reaction.	
III	Mendel Ion Genetics, Genotypes, Phenotypes, Mutation, Multiple Alleles. Biochemical Markers of Individuality: General Understanding, Classification of Markers, Biochemical Basis of Genetic Variation. Structure of DNA, Damage to DNA, Variation in DNA, DNA as Excellent Polymorphic Marker, and Sources of DNA as Forensic Evidence. Different Extraction Techniques of DNA, Basic DNA Typing Techniques; RFLP, PCR, Electrophoresis, and Detection Methods. Polymorphic Enzymes Typing- PGM, ESD, EAP, AK, etc., and their Forensic Significance, HLA Typing, Role of Serogenetic Markers in Individualization, Paternity Disputes, etc.	18
IV	Definition, Developmental History, Brief knowledge about legal procedures in courts, inquests, criminal courts and their powers, subpoenas, and oaths medical experts. Recording of Medical Experts 'Evidence in Courts. Types of Medical Evidence, Kinds of Witness, and Rules for Giving Evidence. Definition and Importance of Personal Identification. Parameters Contributing to Personal Identity-Race, Sex, Age, Complexion, Features & Photographs, Anthropometric measurements etc.	18
V	Thanatology: Definition, Meaning, Death, Type of Death, Concept of Death, Modes of Death and their Causes and Sign (Immediate Changes, Early Changes, Late Changes) and Symptoms, Manner of Death, Cause of Death, Asphyxia Death, Suspended Animation and Medico Legal Importance of Death. Autopsy: Definition, Classification, Concepts, Objectives, Legal Formalities for Autopsy, Autopsy Procedure, Skin Incisions, etc. Post-Mortem Examination: Importance, Post-Mortem Report Format, External & Internal Examination in Brief. Viscera & Its Preservation. Examination of Asphyxia Death, Examination of Decomposed and Mutilated Bodies. Precautions to be taken during Postmortem Examination. Injuries: Definition, classification, Mechanical Injuries (Abrasion, Contusion, Laceration, Fracture and Dislocation of Bone/ Teeth, Incised Wounds, Chop Wound, Stab Wounds and Firearm Wounds), Regional Injuries, Thermal Injuries (Injuries due to Cold and Heat), Chemical Injuries, Miscellaneous Injuries. Medico-Legal Aspects, Post Mortem & Ante Mortem Wounds, General Characteristics of injuries from Burns, Scalds, Lightning, Electricity and Radiation. Ancient legal medicine practices: Injury classification; Abhighata, Vrana, Chinna, Bhinna, etc. Cause and manner of death analysis (Marma points, vital organ injuries).	18
Keywords/Tags: DNA, Injuries, Genetics, Post Mortem		

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**TextBooks, ReferenceBooks,Other Resources**

**Suggested Readings:**

1. Albert S., Bray B. Lewis D, Roberts K. & Watson J.D. (1989). Molecular Biology of Cell. New York, Garland Pub.
2. Ball S., (1991). Environmental Law - The Law and Policy relating to Protection of Environment. India, Universal Law Pub Co, Delhi.
3. Biology Methods Manual (1978). London, Metropolitan Police Forensic Science Laboratory Pub.
4. Catts E.P. & Haskell N.H. (1990). Entomology and Death: A Procedural Guide. London, Joyce's Print Shop.
5. Clifford & B.J. (1971). The Examination and Typing of Bloodstains in the Crime Laboratory. USA, US Court Printing Press.
6. Edwin & Caney H. M. (1993). Human Genetics: The Molecular Revolution. London, Jones & Bartlett Pub.
7. Gardner E.J., Simmons M. I. & Snustad D.P. (1991). Principles of Genetics. New York, John Wiley.
8. Jason P. J. & Simpson K. (2014). Simpson's Forensic Medicine, NY, CRC Press.
9. Mallet X. (2014). Advances in Forensic Human Identification. NY, CRC Press.
10. Modi J.S. (2011). Medical Jurisprudence and Toxicology, India, Law Publishers.
11. Molina D. K., & M.D. (2009). Handbook of Forensic Toxicology for Medical Examiners. USA, CRC Press.

**Suggested Continuous Evaluation Methods:**

**Maximum Marks: 100**

**Continuous Comprehensive Evaluation (CCE): 40**

**University Exam (UE): 60**

Internal Assessment	Marks	External Assessment	Marks
Mid-Semester Test (MST)	20	Term End Exam	60
Teacher Assessment* (TA) and Class attendance	20		
<b>Total</b>	<b>40</b>		<b>60</b>

Teacher Assessment\* Presentation/Assignment/Quiz/Group-Discussion etc.



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Theory Paper: Scheme B-1 for one year PG program			
Program	Class: M.Sc. I semester	Year: 2025	Session: 2025-26
<b>Subject: Forensic Science</b>			
1	Course Code	FSC-PC- 31	
2	Course Title	Forensic Biology, Serology, DNA and Forensic Medicine: Practical	
3	Course Type		
4	Pre-Requisite (if any)		
5	Course Learning Outcome (CLO)	Understanding about Blood/ blood group examination, origin of species by hair samples, identification of fibres by physical and chemical methods, microscopic examination of pollen and diatoms.	
6	Credit Value	4	
7	Total Marks	<b>Max. Marks: 100</b>	<b>Minimum Passing Marks: 40</b>

**Total No. Of Lectures-Tutorial-Practical (in hours per week): L-T-P:**

Topics	No. of Lectures
1. Primary and Confirmatory Examination of Blood/ Semen Samples. 2. Microscopic Examination of Seminal Stains for the Detection of Spermatozoa. 3. Identification of Species from the Hair Sample. 4. Examination of Fiber by Physical and Chemical Methods. 5. Determination of species from Blood Samples. 6. Detection & Examination of Salivary Stains. 7. Draw and label the bones of the human body. 8. Determination of Age and Sex of a Person from Long Bones. 9. Determination of Age and Sex of a Person from Skull. 10. Recording of Bite Marks by Casting & their Photography. 11. Collection and Identification of Pollen Grains, Diatoms of Forensic Importance. 12. Examination of Lip Prints.	

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**Textbooks, Reference Books, Other Resources**

**Suggested Readings:**

1. Albert S., Bray B. Lewis D, Roberts K. & Watson J.D. (1989). Molecular Biology of Cell. New York, Garland Pub.
2. Ball S., (1991). Environmental Law - The Law and Policy relating to Protection of Environment. India, Universal Law Pub Co, Delhi.
3. Biology Methods Manual (1978). London, Metropolitan Police Forensic Science Laboratory Pub.
4. Catts E.P. & Haskell N.H. (1990). Entomology and Death: A Procedural Guide. London, Joyce's Print Shop.
5. Clifford & B.J. (1971). The Examination and Typing of Bloodstains in the Crime Laboratory. USA, US Court Printing Press.
6. Edwin & Caney H. M. (1993). Human Genetics: The Molecular Revolution. London, Jones & Bartlett Pub.
7. Gardner E.J., Simmons M. I. & Snustad D.P. (1991). Principles of Genetics. New York, John Wiley.
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10. Modi J.S. (2011). Medical Jurisprudence and Toxicology, India, Law Publishers.
11. Molina D. K., & M.D. (2009). Handbook of Forensic Toxicology for Medical Examiners. USA, CRC Press.

Keyword/Tag: DNA, Injuries, Genetics, Post-Mortem

**Suggested Continuous Evaluation Methods:**

**Maximum Marks: 100**

**Continuous Comprehensive Evaluation (CCE): 40      University Exam (UE): 60**

Internal Assessment	Marks	External Assessment	Marks
Internal Test, Teacher Assessment* (TA) and Class Attendance	40	Term End Exam	60
Total	40		60

Teacher Assessment\* Demonstration/Viva-Voce/Lab record etc.

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Theory Paper: Scheme B-1 for One Year PG program			
Program	Class: M.Sc. I semester	Year: 2025	Session: 2025-26
<b>Subject: Forensic Science</b>			
1	Course Code	FSC-CC- 32	
2	Course Title	Forensic Chemistry Toxicology and Pharmacology: Theory	
3	Course Type		
4	Pre-Requisite (if any)		
5	Course Learning Outcome (CLO)	To understanding of the nature and importance of cells in the human body and different biological materials and their examination also importance of autopsy, knowledge on different types of injury and wound, the different techniques of facial reconstruction and their forensic importance, importance of forensic Medicine.	
6	Credit Value	6	
7	Total Marks	<b>Max. Marks: 100</b>	<b>Minimum Passing Marks: 40</b>

Total No. Of Lectures-Tutorial-Practical (in hours per week): L-T-P:

Unit	Topics	No. Of Lectures
I	Introduction, Concept, and Significance. Poisons: Definition, Classification of Poisons, Types of Poisoning, Mode of Action, Factors Modifying the Action of Poisons, Toxicological Exhibits in Fatal and Survival Cases, Their Preservation, Treatment in Cases of Poisoning, Analysis Report. General Study and Analysis 14 Alkaloids: Definition, Classification, Isolation and General Characterization. Vegetable Poison: General Studies and Analysis of Some Vegetable Poisons, Opium, Abrus, cyanogenetic Glycosides, Dhatura, Marking Nuts, Nux-Vomica, Oleander Aconite, etc. Ancient classification of Poison: Sthavara (plant-based), Jangama (animal based), Krtrima (artificial/compound poisons) Traditional detoxification and antidotes: Agada (antidote formulations) Vamana (emesis), Virechana (purgation), Swedana (sweating) therapeutic detox protocols	14

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II	Extraction, Isolation and Clean-Up Procedures- Extraction of Non-Volatile Organic Poison, Stas-Otto, Dovbriey Nickolls(Ammonium Sulphate) Method, Acid Digest and Valov (Tungstate) Methods, Solid Phase Micro-Extraction Techniques, Solvent Extraction Methods. Volatile Poisons: Industrial Solvent Acid and Basic Distillation. Toxic Cations: Dry Ashing and Wet Digestion Process. Toxic Anions: Dialysis Method, Total Alcoholic Extract.	22
III	Barbiturates, Methaqualone, Hydromorphine, Methadone, Meprobamate, Mescaline, Amphetamines, LDS, Heroin, Cannabinoids, Phinothiazines. Insecticides: Types, General Methods for their Analysis. III Metallic Poisons: Arsenic, Mercury, Lead, Bismuth, Copper, Aluminium, Iron, Barium, Zinc, Snake Venoms and Other Animal Poisons, Irrespirable Gases, etc. Pharmacological Studies: Absorption, Distribution, Metabolism, Pathways of Drug Metabolism. Pharmacodynamics: Introduction, Nature & Scope.	18
IV	Forensic Chemistry and its Scope, Analysis of Beverages: Alcohol and Non-Alcoholic, Country Made Liquor etc. Adulterated food material. Drugs of Abuse: Introduction, Classification, Narcotic Drugs & Psychotropic Substances, Sampling, Specific Drug types (Cannabis, Heroin, Cocaine, Amphetamine), Drugs of Abuse in Sports. Brief Introduction to Drugs and Cosmetic Act, Excise Act, NDPS Act. An Overview of Clandestine Laboratories. Recent Advancement in Drugs: Rave Drugs, Drug Designing, Doping, Drug Discovery Program, Structural Modification in Drugs, and Drug Monitoring Agencies.	18
V	Examination of Petroleum Products: Distillation & Fractionation, Various Fractions and their Commercial Uses. Standard Methods of Analysis of Petroleum Products for Adulteration. Trap Cases: Purpose, Examination of Chemicals Used in Trap Case. Classification of explosives and their Examination. Examination of Building Materials: Types of Cement and their Composition, Determination of Adulterants by Physical, Chemical and Instrumental Methods, Examination of Brick, Analysis of Cement Mortar and Concrete, Analysis of Gold and Other Metals in Cheating Cases.	18
Keywords/Tags: Toxicology, Poison, Drug, Examination		

<b>Textbooks, Reference Books, Other Resources</b>
<b>Suggested Readings:</b> <ol style="list-style-type: none"><li>1. Aggrawal A. (2016). Textbook of Forensic Medicine and Toxicology. India, Avichal Publishing Company.</li><li>2. Bardale R. (2011). Principles of Forensic Medicine &amp; toxicology. India, Jaypee Brothers Medical Publishers (P) Ltd.</li><li>3. 3. Krishan V. (2014). Textbook of Forensic Medicine &amp; Toxicology: Principles &amp; Practice.UK, Elsevier Health Sciences.</li><li>4. 4. Modi J.S. (2011). Medical jurisprudence and Toxicology. India, Law Publishers.8. Jason P. J. &amp; Simpson K. (2014). Simpson's Forensic Medicine, NY, CRC Press.</li></ol>

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5. 5. Chatwal and Anand. (2016). Instrumental Methods of Chemical Analysis. India, Himalaya Publishing House Pvt. Ltd.
6. 6. Churáček J. (1993). Advanced Instrumental Methods of Chemical Analysis. Michigan, E. Harwood,
7. 7. Dean J. A. (1995). Analytical Chemistry Handbook. USA, McGraw Hill Inc

**Suggested Continuous Evaluation Methods:**

**Maximum Marks: 100**

**Continuous Comprehensive Evaluation (CCE): 40**

**University Exam (UE): 60**

Internal Assessment	Marks	External Assessment	Marks
Mid-Semester Test (MST)	20	Term End Exam	60
Teacher Assessment* (TA) and Class attendance	20		
<b>Total</b>	<b>40</b>		<b>60</b>

Teacher Assessment\* Presentation/Assignment/Quiz/Group-Discussion etc.

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**Program: Practical Paper: SchemeB-1 for One Year PG Program**

Subject: Forensic Science	Class: M.Sc. I Semester	Year: 2025	Session: 2025-26
1	Course Code	FSC-PC- 32	
2	Course Title	Forensic Chemistry Toxicology and Pharmacology: Practical	
3	Course Type		
4	Pre- Requisite (if any)		
5	Course Learning Outcome (CLO)	Understanding about different Vegetable Poisons, Extraction Identification of Insecticides and Pesticides, Identification of Drugs/ Toxicants, Identification of Metallic Poisons from Viscera.	
6	Credit Value	4	
7	Total Marks	<b>Max. Marks: 100</b>	<b>Minimum Passing Marks: 40</b>

Total No. Of Lectures-Tutorial-Practical (in hours per week): L-T-P:

Topics	No. of Lectures
1. Identification of Common Plants i.e., Calotropis, Cannabis, Dhatura, Nux-Vomica, Marking Nut, Abrus precatorius, Opium Poppy etc. by physical Examination and Color Test.	
2. Identification of Different Vegetable Poisons by Thin Layer Chromatography etc.	
3. Extraction and Identification of Insecticides and Pesticides by Colour Test/TLC.	
4. Extraction and Identification of Drugs/ Toxicants from Biological Matrix and their Detection.	

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