

**Weekly Lesson Plan**  
**B.Sc. (Forensic Science) - I Semester (Odd)**  
**Session- 2022-23**

**Subject:** Forensic Science

**Paper I:** Basics of Forensic Science

**Paper II:** Crime Scene Investigation and Management

Week	Dates	Paper	Topic(s)
1.	Sep 1-3, 2022	I	Introduction to the syllabus Introduction, Definition, need , significance and scope of Forensic Science
		II	Crime scene investigation: Definition of crime scene, crimes without scene
2.	Sep 5-10, 2022	I	Principle and laws of Forensic Science,.
		II	Classification of crime scene: indoor & outdoor, primary & secondary, macroscopic & microscopic crime scene. Significance of crime scene, argument and ethics of crime scene.
3.	Sep 12-17, 2022	I	Domains in Forensic Science : Forensic Biology and serology,
		II	Definition of physical evidence, classification of physical evidence, types of physical evidences, sources of physical evidence
4.	Sep 19-24, 2022	I	Forensic Medicine, Forensic Toxicology, Forensic Osteology
		II	Signification and value of physical evidence, linkage between crime scene, victim and criminal
5.	Sep 26-Oct 1, 2022	I	Forensic Photography and its applications, Ballistics, Fingerprint, Questioned Documents.
		II	Study of some special crime scene such as mass disaster, terror attack, geological scene and explosive etc
6.	Oct 3-8, 2022	I	Forensic Psychology, Detection of Deception Forensic Anthropology.
		II	Cr ime scene management: Introduction to crime scene management, duties of first responding of ficer at the scene of crime
7.	Oct 10-15, 2022	I	Wildlife Forensic, DNA profiling

		II	Duties of crime scene investigator, specialized personnel at the crime scene: biological or chemical terrorist crime scene
8.	Oct 17-22, 2022	I	Forensic Odontology, Forensic Physics
		II	Processing of scene of crime: plan of action, protection of scene of crime
9.	Oct 24-29, 2022	I	Computer Forensic etc. Functions of Forensic Scientist, Police officers.
		II	Photography and video recording of crime scene, sketching of crime scene, searching, collection, preservation, packing of physical evidence
10.	Oct 31-Nov 5, 2022	I	Prosecution, Judicial Officers and Medico legal expert etc. Problem of proof in Forensic Science.
		II	Documentation of crime scene, forwarding or dispatch of relationship between forensic expert and judiciary of ficer
11.	Nov 7-12, 2022	I	Legal admissibility of various evidences, corpus delicti, modus operandi.
		II	Importance of FSL, National and International scenario of FSL,
12.	Nov 14-19, 2022	I	Multi professional and multi personal aspects of forensic science
		II	Facilities provided in forensic science laboratory. Ethical issue in FSL
13.	Nov 21-26, 2022	I	Professional standards for practice of Criminalistics
		II	Criminal behavior: Introduction of criminal behavior , theories of criminal behavior: psychogenic theory,
14.	Nov 28-Dec3, 2022	I	Ethical issue in Forensic Science: Definition of ethics.
		II	classical and non -classical theories, biological theories, physiological theories
15.	Dec 5-10, 2022	I	Sanction against expert for unethical conduct.
			Economic theory, geographical theories, and

		II	sociological theories.
16.	Dec 12-17, 2022	I	Revision
		II	
17.	Dec 19-24, 2022	I	Revision
		II	

**Weekly Lesson Plan**  
**B.Sc. (Forensic Science) - II Semester (Even)**  
**Session- 2022-23**

**Subject:** Forensic Science

**Paper I:** Crime Detection

**Paper II:** Forensic Evidences

Week	Dates	Paper	Topic(s)
1.	Jan 27-28, 2023	I	Introduction to the syllabus Organization set up of Forensic Science Laboratory: Structure and function of SFSL
		II	Definition, types, class and individual characteristics, Principle of exchange,
2.	Jan 30- Feb 4, 2023	I	RFSL, CFSL and facility provided, MFSL
		II	Different search methods for locating physical evidences at scene of crime, Chain of Custody
3.	Feb 6-11, 2023	I	Directorate of Forensic Science Service. Police and Forensic scientist relationship
		II	General information provided by physical evidences.
4.	Feb 13-18, 2023	I	Cr ime detect ion agency: Organization set up and functioning of GEQD
		II	Biological samples Blood, semen, Saliva, urine, vomit, fecal material, hair etc.
5.	Feb 20-25, 2023	I	National Institute of Criminology and Forensic science, Crime investigation department,
		II	Preservation, Packing, labeling, transportation and forwarding of the following physical evidences.
6.	Feb 27-March 4, 2023	I	National Investigation Agency, World Anti-Doping Agency,
		II	Botanical samples - Wood, leaves, pollens, seeds, diatoms etc
7.	March 6-11, 2023	I	Central Bureau of Investigation, National Police Academy

		II	Toxicological samples -viscera, adulterated food stuff , blood, urine, vomit etc. Post mortem samples
8.	March 13-18, 2023	I II	National Drug Testing Laboratory and Organization set up and functioning of CFI  Preservation, packing, labeling, handling, transportation and forwarding of the following physical evidences.
9.	March 20-25, 2023	I II	Centre for Cellular and Molecular Biology Intelligence Bureau,  Chemical samples volatile liquids, nonvolatile liquids, flammable liquids, solid chemical etc.
10.	March 27-April 1, 2023	I II	Bureau of Police Research & Development, Organization. Defense Research and Development Organization  Ballistics samples- firearms, ammunitions, GSR etc.
11.	April 3-8, 2023	I II	Central Police Organization and OCTOPUS  Recognition of Bloodstain Patterns: History of Bloodstain Pattern interpretation,
12.	April 10-15, 2023	I II	Organization set up and functioning of FB, and NCRB  Properties of human blood, target surface considerations, Size, Shape and Directionality of bloodstains
13.	April 17-22, 2023	I II	Research Analysis Wing  Spattered blood, other Bloodstain Pat terns, interpretation of Bloodstain on clothing and footwear, Documentation and Photography for Bloodstain Pattern Analysis.
14.	April 24-29, 2023	I II	Central Detective Training School , Fingerprint Bureau Investigation, Crime Investigation Agency  Physical samples - fiber, glass, textile, wire & cables, dust & soil, cement etc.
15.	May 1-6, 2023	I II	Cr ime Scene Investigation, Drug Enforcement Administrator & Interpol,  Fingerprint , impressions and documents,

16.	May 8-13, 2023	I	Revision
17.	May 15-20, 2023	II	Revision
18.	May 22-26, 2023	I & II	Revision

**Weekly Lesson Plan**  
**B.Sc. (Forensic Science) - III Semester (Odd)**  
**Session- 2022-23**

**Subject:** Forensic Science

**Paper I:** Analytical Techniques and Methods used in Forensic Science

**Paper II:** Questioned Document and Report Writing

Week	Date	Paper	Topic to be Covered
1.	Sep 1-3, 2022	I	Elementary theory of microscope, scope of microscope in forensic science. Varieties of microscopes, stereoscopic microscopes, fluorescent microscope
		II	Forensic Documents: Preliminary examination of questioned documents.
2.	Sep 5-10, 2022	I	polarizing microscope, comparative microscope, scanning electron microscope (SEM), transmission electron microscope (TEM)
		II	Various types of forensic documents
3.	Sep 12-17, 2022	I	Chromatographic parameters – capacity term, selectivity term and efficiency term
		II	genuine and forged documents, classification of forensic documents: Specimen writings, admitted writings
4.	Sep 19-24, 2022	I	HETP, column efficiency – Van Deemter equation and curve
		II	Handling, preservation and marking of documents, natural variation and disguise in writing
5.	Sep 26-Oct 1, 2022	I	Capillary columns, detectors for GLC and HPLC,
		II	Principle of Handwriting Identification, general and individual characteristics

6.	Oct 3-8, 2022	I	temperature programming in GLC and gradient elution in HPLC
		II	Basic Tools needed for forensic documents examination and their use
7.	Oct 10-15, 2022	I	derivatisation for GLC
		II	Natural variations, fundamental divergences, Alternations in documents: erases, additions, overwriting and obliterations
8.	Oct 17-22, 2022	I	derivatisation for HPLC.
		II	Determination of age of Documents, Sequence of Strokes
9.	Oct 24-29, 2022	I	Forensic applications GC-MS
		II	Various types of forgeries and their detection. Analysis of paper and inks.
10.	Oct 31-Nov 5, 2022	I	Forensic applications HPLC-MS
		II	Scientific Report writing: - Components of reports and report format relating to Crime Scene and Laboratory findings
11.	Nov 7-12, 2022	I	Forensic applications Py-GC-MS.
		II	Stages in criminal proceedings: - FIR, Investigation, prosecution and trial stage. Remand and bail processes.
12.	Nov 14-19, 2022	I	Basic principles and applications of – UV-Vis spectroscopy
		II	Crimes under Special and Local laws: - Crimes under Dowry Prohibition Act
13.	Nov 21-26, 2022	I	Infrared spectroscopy,
		II	Crimes under Immoral Traffic Act, Specific offences under the Indian Penal Code (Homicide, sexual offences, offences against property)



14.	Nov 28-Dec3, 2022	I II	Raman spectroscopy,  Classification of offenses: Cognizable and Non cognizable offence,
15.	Dec 5-10, 2022	I II	NMRspectroscopy  Bailable and non bailable offences,
16.	Dec 12-17, 2022	I II	ESR spectroscopy  Role of media, Role & Functions of Police.
17.	Dec 19-24, 2022	I II	Mass spectroscopy  compoundable and non-compoundable offences

**Weekly Lesson Plan**  
**B.Sc. (Forensic Science) - IV Semester (Even)**  
**Session- 2022-23**

**Subject:** Forensic Science

**Paper I:** Forensic Medicine

**Paper II:** Forensic Chemistry and Toxicology

Week	Date	Paper	Topic to be Covered
1.	Jan 27-28, 2023	I	Global Medical Jurisprudence, Legal Procedure in India:- Police inquest, Magistrate's inquest, Coroner's inquest, Oath and affirmation
		II	Forensic toxicology- meaning Poison and Types
2.	Jan 30- Feb 4, 2023	I	Documentary evidence:- Medical certificates, medical reports, dying declaration
		II	Poisoning Action of Poison
3.	Feb 6-11, 2023	I	Understanding laws and ethics of medical practice. Medico legal aspects of death
		II	Poisoning Action of Poison
4.	Feb 13-18, 2023	I	Diagnosis of death- somatic & molecular
		II	Classification of poison
5.	Feb 20-25, 2023	I	Early and intermediate changes following death
		II	Isolation and analysis of metallic poison As
6.	Feb 27-March 4, 2023	I	Late changes after death - putrefaction, autolysis, bacterial action, factors affecting these changes
		II	Isolation and analysis of metallic poison Pb
7.	March 6-11, 2023	I	Determination of time since death, including by histopathological methods.
		II	Isolation and analysis of metallic poison Sb
8.	March 13-18, 2023	I	Medico legal investigation of sexual offences, including examination of victims and suspects
		II	Isolation and analysis of metallic poison Zn

9.	March 20-25, 2023	I	Medico legal aspects of death
		II	Analysis of ethyl alcohol in biological fluids
10.	March 27-April 1, 2023	I	Causes of death such as asphyxia, electrocution, thermal trauma, heat burns, starvation, natural death, sudden death, death by accident
		II	Analysis of methanol, Snake Venom
11.	April 3-8, 2023	I	Medico legal aspects of wounds: -medical and legal definition of wounds, Injuries, Asphyxia,
		II	Opium, Semi-synthetic opiates
12.	April 10-15, 2023	I	Types of mechanical and regional injuries, aging of wounds,
		II	Cannabis drugs such as Bhang, Ganja and Charas LSD and Amphetamine
13.	April 17-22, 2023	I	Difference between suicidal, homicidal General Idea about NDPS Act. Sections 15 – 32, 37
		II	Amphetamine
14.	April 24-29, 2023	I	Identification of living
		II	Benzodiazepines
15.	May 1-6, 2023	I	Identification of dead
		II	Phenothiazines
16.	May 8-13, 2023	I	Time since death
		II	Barbiturates
17.	May 15-20, 2023	I	accidental wounds,
		II	Bhang, Ganja
18.	May 22-26, 2023	I	Unnatural Offences (Sexual Offences)
		II	Charas LSD

**Weekly Lesson Plan**  
**B.Sc. (Forensic Science) - V Semester (Odd)**  
**Session- 2022-23**

**Subject: Forensic Science**

**Paper I: Finger prints & Impressions**

**Paper II: Analytical Techniques and Methods Used in Forensic Science - II**

Week	Dates	Paper	Topic(s)
1.	Sep 1-3, 2022	I II	Introduction to the syllabus Fingerprints as evidence: Its recognition, Methods of digestion of samples with special reference to microwave digestion
2.	Sep 5-10, 2022	I II	History and Development of fingerprints Methods of separation and isolation with special reference to steam distillation, fractional distillation, sweep distillation, under vacuum distillation
3.	Sep 12-17, 2022	I II	Formation of ridges, Fingerprints patterns, Pattern Areas Solvent extraction, solid phase extraction
4.	Sep 19-24, 2022	I II	General and Individual characteristics of fingerprint, Composition of Sweat Solid phase micro extraction, supercritical fluid extract ion, micellar extraction
5.	Sep 26-Oct 1, 2022	I II	Classification of fingerprints- Henry System of classification, Single digit Classification, Extension of Henry system Microwave accelerated reaction system, density gradient centrifugation, field flow fractionation.
6.	Oct 3-8, 2022	I II	Fingerprint Bureau. AFIS (Automated Dialysis and electro dialysis, head spectra technique
7.	Oct 10-15, 2022	I II	Fingerprint Identification System, Search for Fingerprints, Chance Fingerprints, Latent Fingerprints Electrophoresis – Gel electrophoresis basic principles and applications
8.	Oct 17-22, 2022	I II	Various methods of development of fingerprints: conventional methods, physical and chemical flescent method, Capillary electrophoresis, basic principles and

			applications
9.	Oct 24-29, 2022	I	Magnetic Powder method, fuming method, laser method.
		II	Laser system – purity of spectral lines, coherence length and coherence time, spatial coherence of a source
10.	Oct 31-Nov 5, 2022	I	Taking fingerprints from living and dead persons. Different Types of Surfaces (Porous, Semi-porous, non-porous)
		II	Einstein's A and B coefficients, coherence of induced emissions, conditions for laser action, existence of a meta stable state
11.	Nov 7-12, 2022	I	Impressions and Prints: Footprints: Importance, Gait Pattern, Casting of footprints in Different medium, Taking Control samples.
		II	Population by inversion by pumping and cavity. He -Ne and Ruby laser.
12.	Nov 14-19, 2022	I	Lip Prints- Nature, Location, collection and evaluation, taking control samples, Forensic Significance.
		II	Application of Laser polarization and including higher order and
13.	Nov 21-26, 2022	I	Tyre Marks/prints and Skid marks, taking control samples
		II	Generation of harmonics, momentum mismatch and choice of right crystal and direction for compensation.
14.	Nov 28-Dec3, 2022	I	Bite Marks- Nature, Location, collection and evaluation, taking control samples, Forensic Significance.
		II	Basic principles and applications of and gel permeation chromatography
15.	Dec 5-10, 2022	I	Ear Prints- Nature, Location, collection and evaluation, taking control samples
		II	Basic principles and applications of adsorption, ion exchange
16.	Dec 12-17, 2022	I	Revision
		II	
17.	Dec 19-24, 2022	I	Revision
		II	

**Weekly Lesson Plan**  
**B.Sc. (Forensic Science) - VI Semester (Even)**  
**Session- 2022-23**

**Subject: Forensic Science**

**Paper I: Computer Forensics and Biometrics**

**Paper II: Advanced Forensic Serology and DNA Forensics**

Week	Dates	Paper	Topic(s)
1.	Jan 27-28, 2023	I II	Computer and Cyber Crimes: Introduction Immunology: Immune System, immune response Innate and acquired immunity and antigens, heptanes and adjuvant.
2.	Jan 30- Feb 4, 2023	I II	Stand alone computer crimes –Printing of counterfeit currency notes Immunoglobulin: Types, Physio-chemical properties and function, raising of antisera.
3.	Feb 6-11, 2023	I II	Computer Scanners,. Lectins: Forensic significance, buffers and serological reagents, methods of sterilization employed for serological work.
4.	Feb 13-18, 2023	I II	Imaging Software Photoshop, Photo Paint etc Antigen-Antibody Reactions: Precipitation, agglutination, complement, neutralization, immune fluorescence.
5.	Feb 20-25, 2023	I II	Software piracy, Data Recovery HLA system: Its applications in paternity testing, pitfalls of HLA system.)
6.	Feb 27-March 4, 2023	I II	Networked Computer Crimes: Unauthorized access and interception Forensic examination of Body Fluids : Species of Origin (Immuno diffusion and Immuno electrophoresis
7.	March 6-11, 2023	I II	Hacking, Computer Viruses Individualization: Blood Grouping, Enzyme Typing.
8.	March 13-18, 2023	I II	Programme manipulations Computer Security,  DNA Profiling : Introduction, History of DNA Typing, human genetics – heredity, alleles, mutations
9.	March 20-25, 2023	I	Internet, use of Biometric methods with special reference to personal identification.

		II	Population genetics, molecular biology of DNA, variations, polymorphism
10.	March 27-April1, 2023	I II	Image Processing: Introduction and Process  DNA typing systems- RELP analysis. PCR amplifications, sequence polymorphism Mitochondrial DNA, evaluation of results,
11.	April 3-8, 2023	I II	Image Enhancement and Restoration. Frequency estimate calculations, interpretations, allele frequency determination, match probability – database, quality control, certification and accreditation
12.	April 10-15, 2023	I II	Methods for digital video recording, Digitalization Techniques,  Analysis of SNP, Y-STR
13.	April 17-22, 2023	I II	The investigation of erased tapes an analysis of signals (Analog video image processing)  New and future technologies : DNA chips, SNPs and limitations of DNA profiling Forensic Significance of DNA Profiling: Applications in disputed paternity cases,
14.	April 24-29, 2023	I II	Compression, Encryption methods  Forensic Significance of DNA Profiling Child swapping, missing person's identity – civil immigrations, veterinary, wildlife and agriculture cases,
15.	May 1-6, 2023	I II	Investigation of Integrity of Images and Videos. Legal perspectives– legal standards for admissibility of DNA profiling
16.	May 8-13, 2023	I II	Biometrics: Definition, Types of Biometrics Tools  Procedural and ethical concerns, status of development of DNA profiling in India and abroad.
17.	May 15-20, 2023	I II	Revision
18.	May 22-26, 2023	I II	Revision

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – VII Semester (Odd)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC 101**

**Paper: General Forensic Science**

**Semester: 7<sup>th</sup>**

<b>Week</b>	<b>Date</b>	<b>Topic to be Covered</b>
1.	Sep 1-3, 2022	Forensic Science : History, Development, and need of Forensic Science
2.	Sep 5-10, 2022	Forensic Science: Forensic Science and its International Perspective, Ethics in Forensic Science
3.	Sep 12-17, 2022	Forensic Science : Duties of Forensic Scientist, Basic Principles of Forensic Science.
4.	Sep 19-24, 2022	Organizational setup of Forensic Science Laboratories: CFSL, FSL, GEQD, DFSS, Central Detective Training School
5.	Sep 26-Oct 1, 2022	Organizational setup of Forensic Science Laboratories: NCRB, Mobile Forensic Science Laboratory, Branches of Forensic Science.
6.	Oct 3-8, 2022	Crime Scene Investigation: Introduction, characteristics and types of crime scene, physical evidences, Protection and recording of crime scene
7.	Oct 10-15, 2022	Crime Scene Investigation: Search of physical clues, preservation, chain of custody, packing and forwarding of physical clues, blood pattern analysis.
8.	Oct 17-22, 2022	Fingerprints : introduction, types of fingerprints
9.	Oct 24-29, 2022	Fingerprints: searching methods, collection and preservation and evaluation.
10.	Oct 31-Nov 5, 2022	Forensic Photography: Basic principles and techniques of Black & White and colour photography,
11.	Nov 7-12, 2022	Forensic Photography: IR photography, working of digital camera and basics of digital imaging.digital photography,
12.	Nov 14-19, 2022	Forensic Photography: Digital videography. Crime scene and laboratory photography, microphotography.
13.	Nov 21-26, 2022	Criminal Justice System: Structure of Police, Prosecution & Judicial Organizations, Inquest,
14.	Nov 28-Dec3, 2022	Criminal Justice System: Evidence in enquiries and trials, expert witness, Admissibility of forensic reports in court, expert testimony.
15.	Dec 5-10, 2022	Computers: Introduction, History of Digital computer,



		computer organization-hardware
16.	Dec 12-17, 2022	Computers: Circuits for interfacing computer to instruments, computer scanners
17.	Dec 19-24, 2022	Computers: Imaging softwares (Photo paint, Photoshop etc.), MS word, Data library

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – VII Semester (Odd)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC 102**

**Paper: Instrumental Analysis I**

**Semester: 7<sup>th</sup>**

<b>Week</b>	<b>Dates</b>	<b>Topic(s)</b>
1.	Sep 1-3, 2022	Microscopy: Principles and techniques of Microscopy: Light Microscope, Phase contrast, Fluorescence, stereomicroscope,
2.	Sep 5-10, 2022	Polarizing, comparison and Electron Microscope (Scanning, Transmission) Forensic application of microscopy. Microspectrophotometry
3.	Sep 12-17, 2022	Chromatography: Introduction Basic principles, types of chromatography, partition and adsorption chromatography techniques.
4.	Sep 19-24, 2022	Thin Layer Chromatography: introduction theory and Instrumentation of TLC, HPTLC, stationary phases, visualization methods, densitometer, applications.
5.	Sep 26-Oct 1, 2022	Gas chromatography: introduction, principle and Instrumentation of GC, types of GC ( GLC, and GSC) and column types and structure, Detectors for GC -TCD,FID, ECD, NPD etc, and evaluation of chromatogram, Pyrolysis GC, GC-MS; forensic applications.
6.	Oct 3-8, 2022	High Performance liquid chromatography: introduction, principle and Instrumentation of HPLC, injection system, column structure, detectors for HPLC, advantage and limitations of HPLC; their forensic applications.
7.	Oct 10-15, 2022	Spectroscopy: Basic principles, property of EMR, interaction of radiation with matters, atomic and molecular spectra; source of radiations
8.	Oct 17-22, 2022	Radiations detection devices, wavelength selector, basic components of absorption and

		emission spectroscopy.
9.	Oct 24-29, 2022	UV-Visible, IR and Raman spectroscopy: introduction, principles, instrumentation, single beam and double beam spectrophotometer, interpretation of spectra,
10.	Oct 31-Nov 5, 2022	Qualitative and quantitative analysis: advantage and limitations of UV, IR and Raman spectrophotometer, forensic applications.
11.	Nov 7-12, 2022	Atomic absorption/ emission spectroscopy: introduction, principles, Instrumentation; types of AAS, ICP-AES,
12.	Nov 14-19, 2022	Quantitative and qualitative analysis, advantage and limitations of AAS and AES, their forensic applications.
13.	Nov 21-26, 2022	Mass Spectroscopy: principle, instrumentation, ion sources, type of mass analyser- quadrupole, time of flight, double focusing, tandem mass spectroscopy, detectors for mass spectroscopy ; their forensic applications.
14.	Nov 28-Dec3, 2022	NMR Spectroscopy, Neutron Activation Analysis: introduction and principle, techniques and forensic application
15.	Dec 5-10, 2022	X-rays spectroscopy; introduction, principles of X ray diffraction and X ray fluorescence technique, their forensic applications.
16.	Dec 12-17, 2022	Revision
17.	Dec 19-24, 2022	Revision

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – VII Semester (Odd)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC 103**

**Paper Forensic Biology and Serology**

**Semester: 7<sup>th</sup>**

<b>Week</b>	<b>Dates</b>	<b>Topic(s)</b>
1.	Sep 1-3, 2022	Forensic Biology: types of biological evidences, identification, collection, preservation, and significance of biological evidence.
2.	Sep 5-10, 2022	Hair and fibers: classification, characteristics, forensic identification and evaluation of hair and fibers evidences
3.	Sep 12-17, 2022	Microbial forensics and Entomology: Organisms of Forensic significance, types, isolation and identification.
4.	Sep 19-24, 2022	Introduction to forensic Entomology, insects / invertebrates of forensic importance, collection of entomological evidence, their life cycle,
5.	Sep 26-Oct 1, 2022	The role of aquatic insects in forensics, insects succession on carrion and its relationship to determine time since death.
6.	Oct 3-8, 2022	Forensic Botany: Introduction, types, significance, location, collection and Forensic evaluation of botanical evidences such as pollen grains, leaves, seeds etc.
7.	Oct 10-15, 2022	Wood- types, soft and hard wood. Identification and comparison. Diatoms: types, morphology, methods of extraction from tissue and bones, their identification and Forensic significance
8.	Oct 17-22, 2022	Wild life Forensics: scope, different protected and endangered species of animals. Wild life crime investigation- procedure, tools and techniques. Wild life protection act, animal

		poaching, animal abuse, wild life trading.
9.	Oct 24-29, 2022	Identification of pug marks. Identification of wild life clue materials such as hair, skin, fur, bones, nails, horn, teeth etc by conventional and modern methods. Case studies related to wild life crime.
10.	Oct 31-Nov 5, 2022	Forensic Serology: Blood groups – history, biochemistry and genetics of ABO, Rh, MN and other blood group systems, secretors and non secretors, rare alleles.
11.	Nov 7-12, 2022	Blood identification, Methods of ABO blood grouping from dried blood stains and other body fluids, species identification.
12.	Nov 14-19, 2022	Polymorphic Enzymes (PGM, GLO-I, ESD, EAP, AK, ADA etc)- their forensic significance
13.	Nov 21-26, 2022	Body fluids: semen- Introduction, composition, human spermatozoa morphology, Forensic examination and evaluation. Sex determination, X chromosome Inactivation- Barr body.
14.	Nov 28-Dec3, 2022	Sex determination, X chromosome Inactivation- Barr body.
15.	Nov 28-Dec3, 2022	Other biological fluid clues such as saliva, sweat their introduction & collection preservation and examination.
16.	Dec 12-17, 2022	Other biological fluid clues urine and milk their introduction & collection preservation and examination,
17.	Dec 19-24, 2022	Revision

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – VII Semester (Odd)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science (P)**

**Subject: FSC: 104**

**Paper: Forensic Psychology and Statistics**

**Semester: 7<sup>th</sup>**

<b>Week</b>	<b>Date</b>	<b>Topic to be Covered</b>
1.	Sep 1-3, 2022	Introduction to Forensic Psychology; scope & ethics
2.	Sep 5-10, 2022	Distinction between Forensic and therapeutic evaluation, Genetic basis of Psychology
3.	Sep 12-17, 2022	Legal aspect of forensic psychology practice
4.	Sep 19-24, 2022	Forensic Psychiatry: Introduction, classification of mental disorders
5.	Sep 26-Oct 1, 2022	Forensic Psychiatric Examination, Scope of psychiatric examination in criminal and civil cases
6.	Oct 3-8, 2022	Types and classification of crimes and criminals
7.	Oct 10-15, 2022	Criminal Profiling, and Modus Operandi
8.	Oct 17-22, 2022	Brain Fingerprinting, Polygraph
9.	Oct 24-29, 2022	Hypnosis, Narco Analysis, role in criminal justice system
10.	Oct 31-Nov 5, 2022	Arithmetic mean, mode and median Definition, calculation and its properties.
11.	Nov 7-12, 2022	Range, Interquartile range, Quartile deviation, Mean deviation and standard deviation.
12.	Nov 14-19, 2022	Correlation
13.	Nov 21-26, 2022	Regression analysis
14.	Nov 28-Dec3, 2022	Concept of sampling
15.	Dec 5-10, 2022	Sampling methods
16.	Dec 12-17, 2022	Test of significance
17.	Dec 19-24, 2022	Chi-square analysis

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – VIII Semester (Even)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC: 201**

**Paper: Forensic Chemistry and Toxicology**

**Semester: 8<sup>th</sup>**

<b>Week</b>	<b>Date</b>	<b>Topic to be Covered</b>
1.	Jan 27-28, 2023	Introduction, Colour & Spot test, microcrystal tests, inorganic and organic analysis.
2.	Jan 30- Feb 4, 2023	Analysis of Beverages: alcoholic and nonalcoholic beverages, illicit liquors, detection and estimation of ethanol. Breathe alcohol analyzer.
3.	Feb 6-11, 2023	Analysis of trace evidence – cosmetics dyes, pigments, clues of trap cases.
4.	Feb 13-18, 2023	Introduction, standard methods of analysis of petroleum product for adulteration as per BIS.
5.	Feb 20-25, 2023	Arson Investigation: chemistry of fire, Forensic investigation of arson cases.
6.	Feb 27-March 4, 2023	introduction, classification, drug of abuse in sports. General chemistry and analysis of narcotic drugs and psychotropic substances
7.	March 6-11, 2023	cocaine, cannabis, barbiturates, benzodiazepines, amphetamine, opium, hallucinogens, designer drugs.
8.	March 13-18, 2023	Introduction of NDPS act, drugs and cosmetic act.
9.	March 20-25, 2023	Introduction and scope of forensic toxicology, classification of poisons, legal aspects of poisoning, types of poisoning
10.	March 27-April 1, 2023	Antidotes, factors modifying action of poisons, LD-50, sign and symptoms of common poisons.
11.	April 3-8, 2023	Collection, preservation of samples; Conventional and recent extraction and isolation methods of poisons.
12.	April 10-15, 2023	Pharmacology: theory and principles of absorption, distribution, biotransformation and excretion of drugs/poisons, and their forensic aspects.
13.	April 17-22, 2023	General studies and Analysis of vegetable poisons: Opium, Abrus, Dhatura, Marking nuts, Nux-vomica, Oleander and Aconite.
14.	April 24-29, 2023	Alkaloids: classification and charecterisations.
15.	May 1-6, 2023	Snake venoms and insect poisons,

16.	May 8-13, 2023	Irrespirable gases, food poisoning,
17.	May 15-20, 2023	Insecticides and Metallic Poisons: introduction, types,
18.	May 22-26, 2023	Insecticides and Metallic Poisons: Analysis



**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – VIII Semester (Even)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC: 202**

**Paper: Instrumental Analysis II**

**Semester: 8<sup>th</sup>**

<b>Week</b>	<b>Date</b>	<b>Topic to be Covered</b>
1.	Jan 27-28, 2023	Isolation of DNA, RNA, Purification, Restriction
2.	Jan 30- Feb 4, 2023	PCR – DNA amplification, autoradiography, and forensic applications
3.	Feb 6-11, 2023	Cell and tissue culture techniques: pH and buffers, culture media preparations
4.	Feb 13-18, 2023	Sterilization techniques and forensic applications
5.	Feb 20-25, 2023	Centrifugation Techniques - Centrifugation, cold and ultracentrifuges basic principle, instrumentation
6.	Feb 27-March 4, 2023	G-value & relationship between RPM., applications of analytical centrifugation.
7.	March 6-11, 2023	Electrophoresis: Introduction, principles, factors affecting electrophoresis,
8.	March 13-18, 2023	types of electrophoresis. High and low voltage electrophoresis, capillary electrophoresis.
9.	March 20-25, 2023	Immune electrophoresis, SDS-PAGE and iso- electric focusing; their application.
10.	March 27-April 1, 2023	Enzyme kinetics, enzyme assay techniques such as visible UV spectrophotometric methods
11.	April 3-8, 2023	Luminescence method, Radioisotope methods and Immuno-chemical methods.
12.	April 10-15, 2023	Radio chemical techniques: radioisotope, nature of radioactivity
13.	April 17-22, 2023	Detection and measurements of radioactivity and forensic applications.
14.	April 24-29, 2023	Immunochemical Techniques: Introduction, Antigen - antibody reactions -theory and principles
15.	May 1-6, 2023	Production of antibodies. Immunoprecipitation and agglutination-based techniques such as immunodiffusion, cross over electrophoresis
16.	May 8-13, 2023	Labeling of Antibodies and their detection methods
17.	May 15-20, 2023	ELISA, RIA- their basic principle
18.	May 22-26, 2023	techniques, and their forensic applications.

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – VIII Semester (Even)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC:203**

**Paper: Questioned Document Examination**

**Semester: 8<sup>th</sup>**

<b>Week</b>	<b>Date</b>	<b>Topic to be Covered</b>
1.	Jan 27-28, 2023	Introduction and classification of documents, genuine and forged document, and holographic document
2.	Jan 30- Feb 4, 2023	Preliminary examination of documents, ways of procurement, handling and marking of document, preservation and reproduction of documents. Basic tools for forensic document examination
3.	Feb 6-11, 2023	Handwriting: principle, characteristics of handwriting, Identification and evaluation of handwriting
4.	Feb 13-18, 2023	Types of forgery, characteristic of genuine and forged signature and their examination. Identification of writer of anonymous letter.
5.	Feb 20-25, 2023	Ink and paper examination
6.	Feb 27-March 4, 2023	Determination of age of documents
7.	March 6-11, 2023	Examination of various printing devices and forgeries of printed document
8.	March 13-18, 2023	Examination of altered documents
9.	March 20-25, 2023	Methods and examination of alteration, obliterations, erasures
10.	March 27-April 1, 2023	Secret writing, Intended
11.	April 3-8, 2023	Charred document
12.	April 10-15, 2023	Study of advance techniques for examination of alterations such as Projectina, VSC and ESDA
13.	April 17-22, 2023	Photographic techniques to questioned document,
14.	April 24-29, 2023	Discovery of facts by comparison with known material
15.	May 1-6, 2023	Fry test and Daubert standards
16.	May 8-13, 2023	Report writing
17.	May 15-20, 2023	Reasons for opinion
18.	May 22-26, 2023	Presentation of expert evidence on documents case

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – VIII Semester (Even)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC:204**

**Paper: Forensic Medicine and Anthropology**

**Semester: 8<sup>th</sup>**

<b>Week</b>	<b>Dates</b>	<b>Topic(s)</b>
1.	Jan 27-28, 2023	Forensic Medicine: Characteristics and cause of death; Aphyxial death- Introduction, characteristics and types of asphyxia death (Hanging, strangulation, drowning etc)
2.	Jan 30- Feb 4, 2023	Thermal death and their medico legal aspects. Estimation of time since death, post mortem examination
3.	Feb 6-11, 2023	Injuries: classification, types and characteristics of mechanical injuries, antimortem and post mortem injury,
4.	Feb 13-18, 2023	Artificial injury, grievous injury, and their medicolegal aspects. Investigation of sexual offences, abortion and infanticides
5.	Feb 20-25, 2023	Forensic Odontology: Definition, scope, structural variation and types of teeth.
6.	Feb 27-March 4, 2023	Method, dental anomalies and their significance
7.	March 6-11, 2023	Bite marks: methods of collection, preservation, recording, comparison and their significance.
8.	March 13-18, 2023	Forensic Anthropology: Definition, scope and problems, structure of bones, morphological study of human skeleton,
9.	March 20-25, 2023	Comparative study of human and animal skeleton. Age, sex and stature determination from skeleton remains
10.	March 27-April 1, 2023	Craniometry: introduction, methods and their importance in personal identification

11.	April 3-8, 2023	Osteometry introduction, methods and their importance in personal identification
12.	April 10-15, 2023	Personal Identification Techniques: portrait parley/ Bertillon system,
13.	April 17-22, 2023	Superimposition techniques- photographic and video superimposition.
14.	April 24-29, 2023	Facial reconstruction: introduction, theory and methods, importance of tissue depth to reconstruct various facial features
15.	May 1-6, 2023	Genital and congenital anomalies
16.	May 8-13, 2023	Determination of age and sex from teeth
17.	May 15-20, 2023	Revision
18.	May 22-26, 2023	Revision

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – IX Semester (Odd)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC 301**

**Paper: Forensic Ballistics And Explosives**

**Semester: 9<sup>th</sup>**

<b>Week</b>	<b>Date</b>	<b>Topic to be Covered</b>
1.	Sep 1-3, 2022	History and Background of Firearms, classification and characteristics of firearms, components of firearms
2.	Sep 5-10, 2022	Firing mechanism, smooth bore and rifled bore firearms.
3.	Sep 12-17, 2022	Country made firearms: introduction, constructional features and identification.
4.	Sep 19-24, 2022	Ammunition: classification and composition of cartridges, propellants, cartridge case, wads, compositional aspects of various types of bullets and shotgun projectile.
5.	Sep 26-Oct 1, 2022	Forensic Ballistic: Definition and back ground, internal and external ballistics
6.	Oct 3-8, 2022	Forensic Ballistic: factors affecting internal and external ballistics such as size, shape and ignition of propellants, barrel length, pressure curve
7.	Oct 10-15, 2022	Recoil, ballistics coefficient, air resistance, rifling and bullet stability, measurements of trajectory parameters, ricochet phenomenon
8.	Oct 17-22, 2022	Terminal Ballistics: factors affecting wound ballistics, Bullet penetration phenomena
9.	Oct 24-29, 2022	Terminal Ballistics; characteristic of rifled firearm injury and smooth bore firearm injury, Forensic evaluation of firearms injury.
10.	Oct 31-Nov 5, 2022	Firearms and Ammunition Linkage: principles, comparison of fired cartridge case and bullets. Gunshot residues: introduction, composition and its forensic evaluation,
11.	Nov 7-12, 2022	Firearms and Ammunition Linkage; chemical and instrumental methods of GSR analysis
12.	Nov 14-19, 2022	Reconstruction of Shooting Incidence: theory of shooting reconstruction
13.	Nov 21-26, 2022	Mathematics of shooting reconstruction, accidental discharge, determination of range and time of fire.
14.	Nov 28-Dec3, 2022	Shot pattern testing, laboratory examination of firearms. Law related to examination of firearms in Indian arms act.

15.	Dec 5-10, 2022	Explosive: Classification, types, composition and characteristic of low explosives, and high explosive such as black powder, NC, NG, TNT, RDX, PETN, HMX, Dynamite, ANFO etc..
16.	Dec 12-17, 2022	Detonators, blasting cap, explosive train, IEDs and pyrotechniques. Explosion process and effects, effects of blast wave on structures and human.
17.	Dec 19-24, 2022	Specific approach to scene of explosion, reconstruction of sequence of events, post blast residues, collection, analysis of explosion residues

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – IX Semester (Odd)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC 302**

**Paper: Computer Forensics and Recent Advances**

**Semester: 9<sup>th</sup>**

<b>Week</b>	<b>Dates</b>	<b>Topic(s)</b>
1.	Sep 1-3, 2022	Computer Crime: basics of computers, hardware accessories operating system and software. Types of computer crime
2.	Sep 5-10, 2022	networked computer crime, unauthorized access, program manipulation, software piracy
3.	Sep 12-17, 2022	Cyber Crime: Introduction, Internet, definition, common principles, classification of cyber crimes. Hacking, virus,
4.	Sep 19-24, 2022	Obscenity and pornography, encryption and description methods, Investigation of cyber crime: Search and seizure of computer system
5.	Sep 26-Oct 1, 2022	Computer based evidence and jurisdiction. Tools for analysis
6.	Oct 3-8, 2022	Fundamental of Computer Security: risk assessment and mitigation developing secure system, security models, damage control,
7.	Oct 10-15, 2022	Assessment and auditing, and network security, Recent advances in computer forensics
8.	Oct 17-22, 2022	Computer simulation, image processing and pattern recognition
9.	Oct 24-29, 2022	Stenography and cryptography, Forensic linguistics, e- documents, digital signature.
10.	Oct 31-Nov 5, 2022	Quality Management (ISO/ IEC-17025, NABL): Introduction, general requirement for competence of testing, standardization and

		calibration of forensic laboratories.
11.	Nov 7-12, 2022	Management and technical requirements for quality assurance. Biometrics: definition, scope, types of biometric tool,
12.	Nov 14-19, 2022	Biometrics fingerprint, face, Iris and retina imaging, ear,
13.	Nov 21-26, 2022	Speech recognition, pattern comparison, human gait pattern.
14.	Nov 28-Dec3, 2022	Professional ethics and conduct of forensic expert, dealing with news media. Intellectual property right: copyright and patent.
15.	Nov 28-Dec3, 2022	IT act 2000- introduction to offences and penalties
16.	Dec 12-17, 2022	Revision
17.	Dec 19-24, 2022	Revision



**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – IX Semester**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC 303**

**Paper: DNA Profiling**

**Semester: 9<sup>th</sup>**

<b>Week</b>	<b>Dates</b>	<b>Topic(s)</b>
1.	Sep 1-3, 2022	Introduction of Human Genome: Human chromosomes and karyotype, human nuclear genome. Mutation-types and cause, gens and alleles, human genetics and heredity.
2.	Sep 5-10, 2022	Calculation of allele frequencies. types and properties of DNA, mt DNA, DNA modifying enzymes, restriction enzymes
3.	Sep 12-17, 2022	Forensic DNA Profiling: History and development of DNA finger printing Basic Genotyping: VNTR, STR,
4.	Sep 19-24, 2022	SNPs polymorphism and other classes of DNA polymorphism. DNA markers
5.	Sep 26-Oct 1, 2022	Methods of DNA profiling: Introduction, principle, techniques of RFLP, STRs, SNP profiling
6.	Oct 3-8, 2022	Assessment of STR profiling their advantage and limitations. Gender identification: Y-STR and mt-DNA profiling.
7.	Oct 10-15, 2022	DNA Amplification (PCR)- principle, method, factors affecting PCR, advantage of PCR based techniques over RFLP. Blotting techniques: Southern, Northern
8.	Oct 17-22, 2022	Blotting techniques: Western, dot-, slot- and vacuum blotting.
9.	Oct 24-29, 2022	DNA sample preparation: sample sources for DNA, collection and preservation of samples for DNA testing, conventional and recent methods of DNA extraction, separation
10.	Oct 31-Nov 5, 2022	DNA Quantitation methods, , DNA sequencing.

		DNA data base- CODIS
11.	Nov 7-12, 2022	Nucleic acid hybridization: Preparation of nucleic acid probes for DNA profiling Single locus and multi locus probes, and cDNA probes; Methods of labeling of DNA probes- Radioactive and non-radioactive labeling
12.	Nov 14-19, 2022	Detection methods, DNA Micro array technology. Forensic Issues: degraded DNA, contamination,
13.	Nov 21-26, 2022	Forensic Issues: mixed samples and low copy number. Result interpretation, Quality assurance in DFP testing. Legal standards for admissibility of DNA profiling
14.	Nov 28-Dec3, 2022	Forensic Signification of DNA Profiling: personal identification, paternity testing
15.	Nov 28-Dec3, 2022	Forensic Signification of DNA Profiling: veterinary, agriculture and mass disaster.
16.	Dec 12-17, 2022	Report writing and presentation of report in case of DNA profiling.
17.	Dec 19-24, 2022	Revision

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – IX Semester (Odd)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: Advances in Forensic chemistry I**

**Paper: FSC 304**

**Semester: 9<sup>th</sup>**

<b>Week</b>	<b>Date</b>	<b>Topic to be Covered</b>
1.	Sep 1-3, 2022	Analysis of Beverages: Alcoholic and non-alcoholic beverages and their composition,
2.	Sep 5-10, 2022	Analysis of alcoholic beverages as per BIS and PFA Act,
3.	Sep 12-17, 2022	Detection and determination of ethanol, furfural, organic acids, aldehydes
4.	Sep 19-24, 2022	Detection and determination of chloral hydrate and, methanol in liquors by color tests, TLC, GC, and GC-MS methods.
5.	Sep 26-Oct 1, 2022	Analysis of petroleum products and residues: Distillation and fractionation, Standards/methods of commercial analysis of petroleum products as per ASTM and BIS,
6.	Oct 3-8, 2022	Analysis of traces of petroleum products in forensic exhibits, Comparison of petroleum products, Adulteration of petroleum products
7.	Oct 10-15, 2022	Oils and fats : introduction, analysis and characterization of various oils and fats
8.	Oct 17-22, 2022	Analysis of gold & other metals in cheating cases
9.	Oct 24-29, 2022	Extraction and isolation of poisons/ drugs from biological samples: Volatile compounds: Industrial solvent acid and basic Distillation, Non-volatile organic compounds: Neutral non volatile compounds( pesticides/insecticides-oragnophosphorous compound, chlorinated, compounds, carbamates, and pyrethroids )
10.	Oct 31-Nov 5, 2022	Acidic and basic non volatile compounds -Stas-otto method, DovbrieyNickolls (Ammonium sulphate) method, acid digest and Valov (Tungstate) methods, Solvent extraction,
11.	Nov 7-12, 2022	Toxic Cations: lead, mercury, arsenic -Dry Ashing and Wet digestion process,
12.	Nov 14-19, 2022	Toxic Anions: Dialysis method, total alcoholic extraction method
13.	Nov 21-26, 2022	Recent methods of sample extraction from body fluid: Solid phase extraction, Solid phase micro extraction techniques, liquid phase micro extraction methods
14.	Nov 28-Dec3, 2022	Examination process of suspected poison sample: chemical tests, TLC methods

15.	Dec 5-10, 2022	Examination process of suspected poison sample: UV Vis methods
16.	Dec 12-17, 2022	Examination process of suspected poison sample: IR spectrometry, GC-MS
17.	Dec 19-24, 2022	Examination process of suspected poison sample: TLC methods

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – IX Semester (Odd)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC 305**

**Paper: Advance forensic biology 1**

**Semester: 9<sup>th</sup>**

<b>Week</b>	<b>Date</b>	<b>Topic to be Covered</b>
1.	Sep 1-3, 2022	Hair examination: Hair structure, growth and replacement of hair. Identification: Species of origin, variation in different major population groups, somatic origin.
2.	Sep 5-10, 2022	Individualization: Blood grouping, enzyme typing and DNA typing
3.	Sep 12-17, 2022	Botanical evidences: Introduction, types, location, collection evaluation and forensic significance. Wood: Type of wood and their identification and comparison.
4.	Sep 19-24, 2022	Pollens: Structure, function, methods of identification and comparison.
5.	Sep 26-Oct 1, 2022	Diatoms: Nature, location, structure, extraction from various body tissues, including bone marrow preparation of slides, methods of identification and comparison, forensic significance
6.	Oct 3-8, 2022	Leaves: Identification of various types of leaves and their anatomy, methods of comparison.
7.	Oct 10-15, 2022	Forensic Microbiology: Types and identification of microbial organisms of forensic significance.
8.	Oct 17-22, 2022	Wild Life Forensics: Introduction, importance, protected and endangered species of Animals and Plants
9.	Oct 24-29, 2022	Identification of wild life materials such as skin, fur, bones, nails, horn, teeth, flowers and plants
10.	Oct 31-Nov 5, 2022	Conventional and modern methods Identification of Pug marks of various animals.
11.	Nov 7-12, 2022	Forensic Entomology: Introduction, general entomology
12.	Nov 14-19, 2022	Arthropod biology
13.	Nov 21-26, 2022	Insects of forensic importance
14.	Nov 28-Dec3, 2022	collection of entomological evidence during death investigations
15.	Dec 5-10, 2022	The role of aquatic insects in forensic investigations
16.	Dec 12-17, 2022	Insect succession on carrion and its relationship to determine time since death
17.	Dec 19-24, 2022	its application to Forensic Entomology

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – X Semester (Even)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC 401**

**Paper: Forensic Physics**

**Semester: 10<sup>th</sup>**

<b>Week</b>	<b>Date</b>	<b>Topic to be Covered</b>
1.	Jan 27-28, 2023	Forensic Physics: Introduction and scope, tools and techniques, examination of vehicle in case of road traffic accident, skid marks evaluation.
2.	Jan 30- Feb 4, 2023	Glass: Types of glass and their composition-soda-lime, boro-silicate, safety glass, laminated, light-sensitive, tampered/ toughened, wire glass, coloured glass
3.	Feb 6-11, 2023	Glass: Matching and comparison. Forensic examinations of glass fractures- rib marks, hackle marks, cone fracture, wavy, backward fragmentation, concentric and radial fractures. Colour, fluorescence, physical measurements,
4.	Feb 13-18, 2023	Glass: refractive index, density gradient, becke-line, specific gravity examination and elemental analysis of glass evidence.
5.	Feb 20-25, 2023	Paint: Types of paint and their composition, macroscopic and microscopic analysis of paint pigments, pigment distribution, micro-chemical analysis- solubility test
6.	Feb 27-March 4, 2023	Paint: pyrolysis gas chromatography, TLC, colorimetric analysis, IR spectroscopy and X-ray diffraction Elemental analysis, mass spectrometer, interpretation of paint evidence.
7.	March 6-11, 2023	Fibre: Types of fibres, forensic aspects of fibre examination- fluorescence, optical properties, refractive index, Birefringence, dye analysis. Physical fit and chemical testing.
8.	March 13-18, 2023	Fibre:TLC, IR-micro spectroscopy, Py-MS. Difference between natural and man-made fibres .
9.	March 20-25, 2023	Miscellaneous Evidences: wire, broken bangles, seals, counterfeit coins.
10.	March 27-April, 2023	Miscellaneous Evidences ropes/ strings, synthetic fibers etc their introduction & forensic examination.
11.	April 3-8, 2023	Building Materials: Cement- composition, types,

		Forensic Analysis- bromoform test.
12.	April 10-15, 2023	Building Materials: fineness test, ignition-loss test, Identification of adulterated cement. Mortar and concrete analysis.
13.	April 17-22, 2023	Soil: Types and composition of soil, sample preparation, removal of contaminants, colour, molecular particle size distribution, turbidity test .
14.	April 24-29, 2023	Soil: pH measurements, microscopic examination density gradient analysis
15.	May 1-6, 2023	Soil: Ignition-loss test, elemental analysis, interpretation of soil evidence.
16.	May 8-13, 2023	Tool Marks: theory, types of tool marks, and their forensic examination, Restoration methods of obliterated marks.
17.	May 15-20, 2023	Voice Analysis and Tape Authentication: theory of voice production, theory of voice identification
18.	May 22-26, 2023	Voice Analysis and Tape Authentication: the sound spectrograph, voice comparison-standards and methods of voice comparison, significance .

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) - X Semester (Even)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC 402**

**Paper: Forensic Dactylography and other Impressions**

**Semester: 10<sup>th</sup>**

<b>Week</b>	<b>Dates</b>	<b>Topic(s)</b>
1.	Jan 27-28, 2023	History and development of finger prints
2.	Jan 30- Feb 4, 2023	Morphology of ridged skin, types, and variations in finger prints: Causes and genetics, population variations. Finger Prints Bureau.
3.	Feb 6-11, 2023	Sample collection: Basics of taking inked prints, collection of prints samples of living and dead, devices and material for recording prints.
4.	Feb 13-18, 2023	Classification of finger Prints, pattern types, pattern area.
5.	Feb 20-25, 2023	Extension of Henry system searching of finger prints, single finger print.
6.	Feb 27-March 4, 2023	Chance Finger Prints: Latent prints, plastic prints, causes, composition of sweat.
7.	March 6-11, 2023	Development of latent finger prints: powder methods: such as fluorescent powder, magnetic powder. Fuming methods: Iodine and cyanoacrylate methods.
8.	March 13-18, 2023	Chemical methods: Ninhydrin and its analogue silver nitrate, application of laser technologies, metal deposition method. Biological methods of development of latent prints on skin.
9.	March 20-25, 2023	Latent print processing Systematic approach to latent print processing, preserving and lifting of finger prints.
10.	March 27-April 1, 2023	Photography of Finger Prints, comparison of finger prints: basis of comparison, class characteristics, individual characteristics, various types of ridge characteristics
11.	April 3-8, 2023	Automatic Finger Print Identification system (AFIS) and its variants
12.	April 10-15, 2023	Digital Image processing of finger prints and their enhancement. Presentation of expert evidence on finger prints in court
13.	April 17-22, 2023	Foot / footwear/ introduction, class and individual characteristics, types, collection, preservation and forensic examination and evaluation of impressions,



		Gait pattern.
14.	April 24-29, 2023	Tyre impressions: introduction, class and individual characteristics, types, collection, preservation and forensic examination and evaluation of impressions
15.	May 1-6, 2023	Ear Prints – Nature, location, collection, forensic examination, and significance.
16.	May 8-13, 2023	Lip Prints- Nature, location, collection, forensic examination, and significance.
17.	May 15-20, 2023	Revision
18.	May 22-26, 2023	Revision

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – X Semester (Even)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: Advances in Forensic Chemistry II**

**Paper: FSC 403**

**Semester: 10<sup>th</sup>**

<b>Week</b>	<b>Date</b>	<b>Topic to be Covered</b>
1.	Jan 27-28, 2023	Analysis of Narcotic Drugs and Psychotropic Substances: Introduction classification of narcotic substances, natural narcotics, semi synthetic and synthetic narcotic substances.
2.	Jan 30- Feb 4, 2023	Opiate: extraction of alkaloids from plant materials, a analysis of opium alkaloids, and derivatives using spot tests, microcrystal tests,
3.	Feb 6-11, 2023	Opiate: TLC, UV- vis spectrometry, IR spectrometry, GC-MS
4.	Feb 13-18, 2023	Cannabis: introduction, chemistry, analysis by spot tests
5.	Feb 20-25, 2023	Cannabis: TLC, and UV, and IR, spectrometry, GC – MS
6.	Feb 27-March 4, 2023	Barbiturates: chemistry, types, extraction and isolation
7.	March 6-11, 2023	Barbiturates: , characterization by spot tests, TLC, and IR spectrometry, HPLC – MS
8.	March 13-18, 2023	Benzodiazepines: Introduction, types and classification, chemistry, characterization by spot tests, TLC, and UV and IR spectrometry, GC – MS etc
9.	March 20-25, 2023	Amphetamines: chemistry, characterization by spot tests, TLC, and UV and IR spectrometry, GC – MS, NMR etc.
10.	March 27-April, 2023	Hallucinogens (LSD, psilocybine and mescaline): Introduction, analysis: spot tests, TLC, and IR spectrometry, HPLC – MS, GC- MS
11.	April 3-8, 2023	Plants poisons: Introduction and classification of plants alkaloids.
12.	April 10-15, 2023	Poisonous seeds: Abrusprecatorius, Atropa belladonna, Argemone mexicana
13.	April 17-22, 2023	Cerberathevetia, Croton tiglium, Datura fastuosa, Ricinus communis
14.	April 24-29, 2023	Poisonous fruits: Semicarpus anacardium, Urginea scilla.
15.	May 1-6, 2023	Poisonous roots: Digitalis, Aconitum napellus
16.	May 8-13, 2023	Plumbago rosea. Poisonous Mushroom
17.	May 15-20, 2023	Analysis of different plants poisons of forensic significance using spot tests, microcrystal tests

18.	May 22-26, 2023	TLC and other sophisticated techniques.
-----	-----------------	---

**Weekly Lesson Plan**  
**M.Sc. (Forensic Science) – X Semester (Even)**  
**Session- 2022-23**

**Class: M.Sc. Forensic Science**

**Subject: FSC 404**

**Paper: Advance Forensic Biology II**

**Semester: 10<sup>th</sup>**

<b>Week</b>	<b>Date</b>	<b>Topic to be Covered</b>
1.	Jan 27-28, 2023	Immunology: Immune system, immune response, innate and acquired immunity and antigens, haptens and adjuvants.
2.	Jan 30- Feb 4, 2023	Immunoglobulin: Types, physio-chemical properties and function, raising of antisera
3.	Feb 6-11, 2023	Lectins: Forensic significance, buffers and serological reagents, methods of sterilization employed for serological work.
4.	Feb 13-18, 2023	Antigen-Antibody Reactions: Precipitation, agglutination, complement, neutralization, immunofluorescence.
5.	Feb 20-25, 2023	HLA system: Its applications in paternity testing, pitfalls of HLA system.
6.	Feb 27-March 4, 2023	Forensic examination of Body fluids: Blood: Identification (Preliminary and confirmatory tests)
7.	March 6-11, 2023	Species of origin; Immunodiffusion and Immunoelectrophoresis
8.	March 13-18, 2023	Individualization: Blood grouping, enzyme typing
9.	March 20-25, 2023	Semen: Composition, functions and morphology of spermatozoa
10.	March 27-April 1, 2023	Identification and preliminary test
11.	April 3-8, 2023	Confirmatory tests including Azoospermic semen stains
12.	April 10-15, 2023	Forensic significance of saliva, sweat, milk, urine
13.	April 17-22, 2023	Faecal matter, vaginal secretions and tests for their identification including the presence of blood group specific ABH substances.
14.	April 24-29, 2023	Polymorphic enzymes: Forensic significance, identification from fresh blood and stains.
15.	May 1-6, 2023	Paternity disputes: Causes, Various serological methods
16.	May 8-13, 2023	Biochemical methods

17.	May 15-20, 2023	Probability for paternity and maternity
18.	May 22-26, 2023	Calculation of paternity index



**HEAD**  
**Chemistry Department**  
**Dyal Singh College, KARNAL**