



Yashwantrao Chavan Institute of Science, Satara
(Autonomous)

Department of Forensic Science

Post Graduate Diploma

in

Forensic Science and Related Laws

Syllabus



Syllabus for Post Graduate Diploma in Forensic Science and Related Laws

1. Title of the Course : Post Graduate Diploma in Forensic Science and Related Laws
2. Eligibility : The candidate who has passed Bachelor Degree from any with Subjects like Physics / Chemistry / Botany/ Zoology / Microbiology / Biotechnology / Forensic Science / Biochemistry / Pharmacy / Environmental Science / Human Biology / Human Anthropology / Psychology / Law as one of the subjects. Possessing Degree in Medical Sciences such as MBBS, BAMS, BHMS, BDS. [Minimum required marks 55% (B+)]
3. Duration of the Course : One Year (Full Time)
4. Fee Structure : As Per the University Circulars
5. Intake Capacity : 20 (Twenty)
6. Teacher Qualifications : As per the U.G.C./ State Government Norms
7. Standard of Passing : As per the rules and regulations of an autonomous institute.
8. Medium of Instruction : English

Post Graduate Diploma in Forensic Science and Related Laws

Scheme of Examination

Semester I

Paper	Title of Paper	Maximum Marks	Internal Assessment	External Assessment	Lectures (1Hour Duration)	Paper Code
I	Fundamentals of Forensic Science I	100	40	60	60	PGDFST 101
II	Imperatives of Forensic Divisions- I	100	40	60	60	PGDFST 102
III	Criminology and Law I	100	40	60	60	PGDFST 103
IV	LAB I	100	40	60	60	PGDFSP 104
V	LAB II	100	40	60	60	PGDFSP 105
VI	LAB III	100	40	60	60	PGDFSP 106
---	Grand Total	600	-	-	360	---

Semester II

Paper	Title of Paper	Maximum Marks	Internal Assessment	External Assessment	Lectures (1 Hour Duration)	Paper Code
I	Fundamentals of Forensic Science II	100	40	60	60	PGDFST 201
II	Imperatives of Forensic Divisions- II	100	40	60	60	PGDFST 202
III	Criminology and Law II	100	40	60	60	PGDFST 203
IV	LAB IV	100	40	60	60	PGDFSP 204
V	LAB V	100	40	60	60	PGDFSP 205
VI	LAB VI	100	40	60	60	PGDFSP 206
---	Grand Total	600	-	-	360	---

*Minimum 40% passing is required in Internal Assessment and External assessment for a student to be declared pass.

P. G. Diploma in Forensic Science and Related Laws

Scheme of Assessment

Theory

Assessment Type	Allocation of Marks	Total Marks
Internal Assessment	1. Online Test of each subject (2) 20 Marks 2. Offline test of each subject (1) 10 Marks 3. Tutorial 10 Marks	40 Marks
Semester End Examination	Question Paper Pattern - 1. One Sentence Questions 10 Marks 2. Short Answer Questions 20 Marks 3. Long Answer Questions 30 Marks	60 Marks
Total		100 Marks

Practical

Allocation of Marks	Total Marks
Practical Course 1 st and 2 nd Paper Pattern- 1. Minor Experiment 25 Marks 2. Major Experiment 35 Marks 3. Practical Journal 10 Marks 4. Viva 10 Marks 5. Day to day performance 10 Marks 6. Case study 10 Marks	100 Marks
Practical Course 3 rd Paper Pattern- 1. Seminar presentation 10 Marks 2. Book review 10 Marks 3. Open book test 10 Marks 4. Field visit 10 Marks 5. Project Sem I 30 Marks (Introduction, Literature review, Progress report) Project Sem II (Materials and Methods, Observations, Result) 6. Viva 10 Marks 7. Research Training Programme 20 Marks	100 Marks

P. G. Diploma in Forensic Science and Related Laws Credits

Semester I

Class	Title	Class Room Instruction Face to Face						15 Hours = 1 Credit (T) 30 Hours = 1 Credit (P)		
P.G.D. F.S. & R.L. Sem I		Per Week		15 Weeks (Per Semester)		Per Semester (Hours)		Credits		Total Credits
		T (60 Min)	P (60 Min)	T	P	T	P	T	P	
PGDFST 101	Fundamentals of Forensic Science I	4		60		60		4		4
PGDFST 102	Imperatives of Forensic Divisions-I	4		60		60		4		4
PGDFST 103	Criminology and Law I	4		60		60		4		4
PGDFSP 104	LAB I		4		60		60		2	2
PGDFSP 105	LAB II		4		60		60		2	2
PGDFSP 106	LAB III		4		60		60		2	2
Total	--	12	12	180	180	180	180	12	06	18

P. G. Diploma in Forensic Science and Related Laws

Semester I- Theory

Course Code	Title	Credits
PGDFST 101	Fundamentals of Forensic Science- I	4
LEARNING OBJECTIVES: 1. The students will be able to understand the History, Development, and Fundamentals of Forensic Science . 2. The students will be able to understand Domains in Forensic Science 3. The students will be able to understand the Crime Scene Management and Investigation 4. The students will be able to understand the Forensic investigation in case of homicide, suicide, etc.		
Unit No.	Contents of Unit	Lectures
Unit I	History, Development, and Introduction to Forensic Science Definition and Nature of Forensic Science, Need, Scope, Principles, and laws of forensic science Global development of Forensic Science, Sir Arthur Conon Doyle and other important contributors, Development of Forensic Science in India, Hierarchy of Forensic Science Laboratories, Case studies.	15 hrs
Unit II	Domains in Forensic Science Introduction and working of - Physics division, Biology, and Serology division, Fingerprint and Question document division, Chemistry and Narcotics division, Toxicology Division, Tape authentication, and speaker identification division, Ballistics division, Digital, and Cyber division, Forensic Psychology division, Voice identification.	15 hrs
Unit III	Crime Scene Management Crime scene: - Importance, problems, location, nature of the scene, Types of the crime scene, Physical Evidence: Definition, Importance, Utility and sources, Types of physical evidence (physical, chemical, biological and digital), CSI & CSM: First officer, Primary survey, Crime scene security Documentation: Photography, videography, note-making, and sketching, Searching: General and advance searching, evidential photography	15 hrs

<p>Unit IV</p>	<p>Crime scene investigation of different cases The forensic investigation in case of homicide, suicide, accidental and negligence death, road and vehicular accidents, rape and sexual assault, white-collar crime, phishing, cyber stalking, email- bombing, data theft, identity theft, online frauds, forgery (Question document), firing cases, fire, and arson cases.</p>	<p>15 hrs</p>
<p>Learning outcomes –</p> <ol style="list-style-type: none"> 1. Students will acquire knowledge about History, Development in Forensic Science 2. Students will learn about the different domains in Forensic Science 3. Students will be able to develop their skills in Crime Scene Management 4. Students will learn about Forensic Investigation in Homicide, Suicide, Vehicular accidents, and Sexual Assault and Rape Case, etc. 		

Course Code	Title	Credits
PGDFST 102	Imperatives of Forensic Divisions- I	4
LEARNING OBJECTIVES:		
1. The students will be able to understand the Fingerprints Science 2. The students will be able to understand Questioned Document 3. The students will be able to understand the Forensic Biology and Serology 4. The students will be able to understand the Digital Forensic and Computer Crimes		
Unit No.	Contents of Unit	Lectures
Unit I	Fingerprint Science History and development, Formation of friction ridges, Classification of fingerprints (Patterns), Types of fingerprints (latent, patent and plastic), Comparison of fingerprints- Class and Individual, Latent print development, collection and preservation, Fingerprint development methods, Poroscopy, Ridgeoscopy, Edgeoscopy, Palm print, footprints, footwear prints, and gait pattern, Postmortem fingerprinting, AFIS- History, development and components, Henry's classification system, the extension of Henry's system	15 hrs
Unit II	Questioned documents Document- definition and significance, Principles of handwriting and document examination, Class and individual characteristics of handwriting Various types of forgeries and their examination, Handling, care and preservation of documents, Classification of forensic documents: questioned, admitted and specimen writings Examination of various documents – currency, bond papers, stamps, passport, Analysis of charred documents, indented and secret writing, Examination of various – typewriters, printers, and photocopiers, Instruments used in document examination	15 hrs
Unit III	Forensic Biology and Serology Examination of various body fluids- blood, semen, saliva, sweat, urine Examination of various biological evidence- pollens, diatoms, hair, Introduction to wildlife forensics, DNA- Structure, PCR amplification, technology and methodology, Paternity testing, Forensic Odontology- Definition, dentition, the chronology of development and age determination, comparison and identification, Bite marks comparison, Forensic odontology in mass disasters, Forensic anthropology, Forensic entomology- the significance of Forensic Entomology	15 hrs
Unit IV	Digital Forensics and Computer Crimes- Definition, Types of computer crimes, Cyber Crimes- Definition Types of cybercrimes- Computer security, Online security, Data retrieval, Approach of Digital and Cyber services in Forensic Services. The Cyber laws its significance with the present-day problem. Court testimonial in Digital and Cyber cases. Steganography, classification of steganography (linguistic, digital, technical) Reversing steganographic process Counter or anti-forensics Anti forensics: Renaming and Manipulating File System, Data Hiding on NTFS with Alternate data stream.	15 hrs

Learning outcomes –

1. Students will acquire knowledge about **Fingerprints, Classifications of Fingerprint Identification systems.**
2. Students will learn about the **Questioned documents, Forgeries, and Handwriting characteristics.**
3. Students will be able to develop their skills in **Forensic Biology and Serology, Forensic Odontology, Bite mark comparison and Forensic Entomology Wildlife Forensic, PCR Amplification.**
4. Students will learn about **Digital forensics and Types of Cyber Crimes, steganography, and its classification.**

Course Code	Title	Credits
PGDFST 103	Criminology and Law I	4
LEARNING OBJECTIVES:		
1. The students will be able to understand the Criminology, Criminal Behavior and its causes and Victimology. 2. The students will be able to understand Criminal Justice System 3. The students will be able to understand the Criminal Procedure Code 4. The students will be able to understand Special acts such as Arms act, Explosive's act and Poison act.		
Unit No.	Contents of Unit	Lectures
Unit I	Criminology Historical records of crime and criminal law, Criminology and different schools of thought, Criminal behavior and its causes, Models of criminal behavior, Victimology and types of victims, Penology and capital punishment, Method of judicial execution (Method of death penalty world -wide), Criminal Profiling, Profile of victim and culprit, its role in crime investigation	15 hrs
Unit II	Criminal Justice System Components of criminal justice system Police system, Judicial System, Courts: Types, powers and jurisdiction, Admissibility of evidence in Courts, Definition of Experts Panchnama and Inquest, complaint, F.I.R., arrest, custody, bail Fundamental rights of a person charged for crime Indian Constitution – Article 20(3), 21, 22.	15 hrs
Unit III	Criminal Procedure Code, 1973 Code of Criminal Procedure -Section 2, 6, 26, 41, 41-A, 53, 53- A, 54, 55, 55-A, 56, 57, 113(A), 174(3), 176 (1), 292, 293, Case studies.	15 hrs
Unit IV	Special Acts Arms Act ,1959 Important provisions, Definition sec. 2, Acquisition, possession, manufacture, sale, import, export and transport of arms and ammunition sec 3 to 12, Provisions relating to Licenses sec. 13 to 18, Offences and penalties sec 25 to 33 The Explosives Substance Act, 1908, Poisons Act, 1919	15 hrs
Learning outcomes –		
1. Students will acquire knowledge about Criminology, Victimology and Penology 2. Students will learn about the Components of Criminal Justice System, Police System, Justice System 3. Students will learn about the Criminal Procedure code 1973, F.I.R., Complaint, Offence 4. Students will learn about the Arms act, Explosive's act and Poison act.		

Course Code	Title	Credits
PGDFSP 104	LAB I	2
Sr. No.	Title of Practical	Number of practical
1.	Practical based on fundamental Law and principles of Forensic science. i. Study of Locard's principle of exchange. ii. Study the Law of individuality. iii. Study the Law of probability.	03
2.	Practical based on crime scene management. i. Crime scene management: Primary survey, barrication, documentation (note-making,) Practical based on crime scene investigation. i. Crime scene investigation in case of homicide. ii. Crime scene investigation in case of Suicide. iii. Crime scene investigation in case of fire and Arson	04
3.	Practical based on the collection of physical evidence. i. Collection of evidence at Scene of Crime (Physical/ Chemical/ Biological) ii. Preservation of evidence according to their nature iii. Packaging, sealing, and forwarding the evidence to forensic science laboratory	03
4	Practical based on Forensic Photography (Crime scene photography) i) To demonstrate photographic equipment and working. ii) Overall Photography: Bird eye view, angular photography iii) Evidential photography: With evidence number and scale, with and without light sources	03

Course Code	Title	Credits
PGDFSP 105	LAB II	2
Sr. No.	Title of Practical	Number of practical
1	Practical based on Fingerprint Science i) To identify the fingerprint pattern. ii) To identify the class and individual Characteristics of the fingerprint iii) To develop latent fingerprint by using different methods. iv) Classification of Fingerprint (Henry Classification) v) To prepare fingerprint chart, FBI FD 258 card.	05
2	Practical based on Forensic biology i) Examination of various body fluids (blood, semen, urine, saliva) ii) To demonstrate the PCR iii) To study the diatoms/pollen grains iv) To study the blood cells. v) To identify the blood group	05
3	Practical based on Questioned Document i) To identify the signature/ disguised ii) Examination of Indian currency and passport under UV light. iii) Identification and comparison of suspected handwriting. iv) Identification and comparison of suspected document. v) To identify the physical matching of torn pieces of paper.	05
4	Practical based on Digital Forensics and Computer Crimes. i) To recover data from hard disk. ii) To study the steganographic technique by using steganographic tool iii) To trace the email route by using open-source software.	03

Course Code	Title	Credits
PGDFSP 106	LAB III	2
Sr. No.	Topic	Number
1.	Seminar Presentation	02
2.	Forensic Book Review (National)	02
3.	Open Book Test	03
4.	Field Visit	01
5.	Project / Case Study (Introduction)	03
6.	Project / Case Study (Literature review)	03
7.	Project/ Progress report	01

Semester II

Class	Title	Class Room Instruction Face to Face						15 Hours = 1 Credit (T) 30 Hours = 1 Credit (P)		
		Per Week		15 Weeks (Per Semester)		Per Semester (Hours)		Credits		Total Credits
		T (60 Min)	P (60 Min)	T	P	T	P	T	P	
P.G.D. F.S. & R.L. Semester II										
PGDFST 201	Fundamentals of Forensic Science II	4		60		60		4		4
PGDFST 202	Imperatives of Forensic Divisions- II	4		60		60		4		4
PGDFST 203	Criminology and Law II	4		60		60		4		4
PGDFSP 204	LAB IV		4		60		60		2	2
PGDFSP 205	LAB V		4		60		60		2	2
PGDFSP 206	LAB VI		4		60		60		2	2
Total	--	12	12	180	180	180	180	12	06	18

Semester II- Theory

Course Code	Title	Credits
PGDFST 201	Fundamentals of Forensic Science II	4
LEARNING OBJECTIVES: <ol style="list-style-type: none"> 1. The students will be able to understand the organizations of center and state and international. 2. The students will be able to understand the emerging trends in Forensic Science. 3. The students will be able to understand the handling of Evidence, Chain of Custody, Report Reading 4. The students will be able to understand the forensic investigation in Fire & Arson cases, Cyber Crime, Explosion. 		
Unit No.	Contents of Unit	Lectures
Unit I	Organizations of Center and State. Government Examiner of questioned documents (GEQD), Fingerprint Bureau, Department of explosives, Central Detective Training School (CDTS), National Crime Record Bureau (NCRB), Bureau of Police Research and Development (BPR&D), DDFL, FSL, RFSL, MFSL, CFSL, NFB, IB, RAW, NIA, CBI, CID International and Other Agencies: CPO, FBI, CIA, CSI, DAB, DEA, BATF, Ameripol, Europol, Frontex, INTERPOL.	15 hrs
Unit II	Emerging trends in Forensic Science Special domains (Forensic archaeology, forensic ornithology, forensic Geology, Forensic Paleontology) Industrial forensic (analytical forensic, forensic accounting, forensic journalism, forensic cinematography, Agro forensic, crop forensic, rural forensic, forensic gemology). Emerging domains (Nuclear forensics, aeronautical forensic, space forensic, forensic genetics, underwater forensic, environmental forensic)	15 hrs
Unit III	Testament in the investigation. Handling of evidence: Collection, packaging, labeling and sealing, Forwarding and Transportation, storage and preservation of evidence, Chain of custody, closing photography, Evidence at the forensic laboratory, Forensic analysis and interpretation of the result, Forensic reports, Crime scene reconstruction,	15 hrs
Unit IV	Crime scene investigation The forensic investigation in case of fire/ arson, pre and post-blast, narcotic and psychotropic substance, cold cases, theft, robbery, dacoity, burglary, Digital and cyber-crime, poisoning, pesticide consumption, suspected death, suspected animal deaths	15 hrs
Learning outcomes – <ol style="list-style-type: none"> 1. Students will acquire knowledge about Bureaus, GEQD, NCRB BPR&D. 2. Students will learn about the different domains in Forensic Science such as Forensic Medicine, Forensic Journalism, Industrial Forensic 3. Students will be able to learn about Handling of Evidence, Chain of Custody and Forensic Reports, CSR 4. Students will learn about Forensic Investigation in Fire/Arson, Explosion, NDPS cases, Robbery, Dacoity. 		

Course Code	Title	Credits
PGDFST 202	Imperatives of Forensic Divisions- II	4
LEARNING OBJECTIVES:		
<p>1. The students will be able to understand Explosives, Classification of Poisons, Classification of drugs and alcoholic beverages, etc.</p> <p>2. The students will be able to understand Forensic medicine, personal identification, Signs of Death, Injuries, Medico-legal aspects, Asphyxia, Sexual offenses, narcoanalysis, polygraph, brain mapping.</p> <p>3. The students will be able to understand the Ballistics, firearms, Bullet, Weapon, Gunshot injuries and investigation of vehicular accidents, Forensic Ballistic, Ammunition, Entry and Exit Wound, Microscopy</p> <p>4. The students will be able to understand instruments such as HPLC, GC, UV/ Vis Spectrophotometer, spectroscopy, electromagnetic radiation.</p>		
Unit No.	Contents of Unit	Lectures
Unit I	Forensic Chemistry and Toxicology Explosives: Introduction and types of explosives, Investigation of crime scene related to explosives, Analysis of residue from explosives, Definition, and classification of poisons, Collection and preservation of samples in poisoning cases, Extraction of poisons from various biological samples, Methods for screening and quantification of poisons, drugs of abuse, Analysis of alcoholic beverages, illicit liquor, breath-analyzer, and its uses, Fire, and arson: Definition and chemistry of fire, Investigation of the fire scene, collection of evidences from the fire scene and laboratory analysis of fire debris	15 hrs
Unit II	Forensic Psychology Narco-analysis- Theory, procedure, admissibility in court, future prospects, merits, and demerits of the technique. Brain Mapping- Theory, procedure, admissibility in court, future prospects, merits, and demerits of the technique. Polygraph- Theory, procedure, admissibility in court, future prospects, merits and demerits of the technique, Forensic psychiatry. Forensic Medicine Introduction and forensic medicine and legal procedure, medical law and ethics, Personal identification, Medico-legal autopsy, Thanatology, death and its causes, Stages of death, Signs of death and changes following death, Injury's classification and medico-legal aspects, Asphyxia and accidents, Death due to heat, cold and electrocution, Sexual offenses.	15 hrs
Unit III	Forensic Physics and Ballistics History of Firearms, Classification of firearms, Types of Ammunition, Projectiles, Mechanism of Firing GSR-Detection methods and analysis, Gunshot wounds, Bullet, Weapon and Cartridge case Identification, Postmortem examination of gunshot injuries, Introduction to Forensic physics and scope, Vehicular accidents, Primary causes of vehicular accidents Investigation of vehicular accidents. Instrumentation: - Microscopy: Compound, Comparison, Stereo, Fluorescence, SEM, TEM	15 hrs

Unit IV	Instrumentation: Chromatography: Paper, TLC, HPTLC, GC, HPLC, etc. Spectroscopy I: Electromagnetic radiations, Basic of Spectroscopy UV-Visible spectrophotometer, FTIR Spectroscopy II: Raman and Mass spectroscopy, Elemental analysis: AAS, AES, XRD, XRF, NAA, Bio Analysis: PCR, Electrophoresis, Instrument related to crime scene investigation (crime light)	15 hrs
Learning outcomes – 1. Students will acquire knowledge about Chemistry, Toxicology, Fire and Arson and drug and abuse and alcoholic beverages, etc. 2. Students will learn about Forensic Medicine including medical law and Ethics and Thanatology Signs of Death, Injury's medico-legal aspects, Forensic Psychiatry and brain mapping, narcoanalysis, and such techniques. 3. Students will be able to learn about Forensic Investigation in Bullet, Weapon, Gunshot injuries, and Vehicular accident 4. Students will learn about and principles of IR, FTIR, Raman Mass Spectroscopy, PCR, AAS, AES		

Course Code	Title	Credits
PGDFST 203	Criminology and Law II	4

LEARNING OBJECTIVES:

1. The students will be able to understand the **Ancient Crime Classification, Crime against the person and White-collar Crimes**
2. The students will be able to understand **the Indian Penal Code such as Offence against body, Property.**
3. The students will be able to understand the **Criminal Procedure Code sections**
4. The students will be able to understand **Special acts such as NDPS Act, IT Act, and Wildlife Protection act.**

Unit No.	Contents of Unit	Lectures
Unit I	Criminology Crime and nature of the crime Ancient crime classification Crimes against person, property, and sexual offenses Color collar crimes Organized crimes and their types Emerging Crimes	15 hrs
Unit II	Indian Penal Code, 1860 2.1 IPC: Section 284, 299, 302, 304A, 304 B,306, 307, 309, 324, 328, 498A 2.2 Section 298,323,334,335,341,342,343,344,346,352,355,358, 379,403,407,414,417, 419,447,448,451,497,498,500,504. 2.3 Section 312,325,337,338,357,381,406,494,509.	15 hrs
Unit III	Indian Evidence Act, 1872 3.1 IEA- Section 3,25,26,32,45,45-A,46,47,47-A, 51,59, 60,61,62,63,73,74 159.	15 hrs
Unit IV	Special Acts Narcotic Drugs and Psychotropic Substance Act, 1985 IT Act, 2005 Wildlife Protection Act 1972	15 hrs

Learning outcomes –

1. Students will acquire knowledge about **Crime and nature of the crime, ancient crime classification, Sexual offenses**
2. Students will learn about the **Indian Penal code sections such as 284, 302, 380etc.**
3. Students will learn about the **Indian Evidence act section such as 3, 45, 46, 47, etc.**
4. Students will learn about the **NDPS Act, IT Act 2005, Wildlife protection act.**

Course Code	Title	Credits
PGDFSP 204	LAB IV	2
Sr. No.	Title of Practical	Number of practical
1.	Practical based on Organizations in central and state i) To study the working of central organizations ii) To study the working of international organizations.	02
2.	Practical based on the collection of physical evidence. i. Collection of evidence at Scene of Crime (Documents/ Fingerprints/ Ballistics etc.) ii. Preservation of evidence according to their nature and forwarding the evidence to forensic science laboratory iii. Packaging, sealing of evidence according to their nature, and forwarding the evidence to forensic science laboratory iv. To study the report writing.	04
3.	Practical based on crime scene investigation i) Crime scene investigation in case of robbery, ii) Crime scene investigation in case of dacoity, iii) Crime scene investigation in case of Digital and cyber-crime iv) Crime scene investigation in case of pesticide consumption, v) Crime scene investigation in case of suspected death vi) Crime scene investigation in case of suspected animal death vii) To write a report on a crime scene investigation.	07

Course Code	Title	Credits
PGDFSP 205	LAB V	2
Sr. No.	Title of Practical	Number of practical
1	Practical based on Forensic chemistry and toxicology <ol style="list-style-type: none"> i. Analysis of drug/ poison using UV- Visible spectrophotometer. ii. To detect plant poisons iii. To examine fire debris and arson cases. iv. To carry out analysis of explosive substances. 	04
2	Practical based on Forensic Medicine <ol style="list-style-type: none"> i) Audio- Video record of post-mortem. ii) To study the different types of injury. iii) Determination of age, sex and ethnicity (skull, dental structure, pelvic girdle, and long bones) 	03
3	Practical based on Forensic physics and ballistics <ol style="list-style-type: none"> i. To study classification of different firearms. ii. Examination of various marks on ammunition for firearm linkage. iii. Examination and collection of physical evidences related to hit and run cases. iv. To examine GSR from suspected evidence. v. To demonstrate SEM. 	05
4	Practical based on Instrumentation <ol style="list-style-type: none"> i) To prepare chromatographic plate and separate the given component. ii) To study HPLC and GC. iii) To measure absorbance of given solution at different concentration by using UV- Vis Spectrophotometer. iv) To study the PCR technique. 	04

Course Code	Title	Credits
PGDFSP 206	LAB VI	2
Sr. No.	Topic	Number
1.	Seminar Presentation	02
2.	Forensic Book Review (International)	02
3.	Open book test	03
4.	Field Visit	01
5.	Project / Case Study (Materials and methods)	03
6.	Project / Case Study (Observations)	03
7.	Project / Case Study (Result)	01

Reference and Text Books:

1. B. R. Sharma, Forensic science in criminal investigation and trials.
2. Dr. R. Krushnamurti, Forensic science in crime investigation.
3. B. S. Nabar, Forensic science in crime investigation.
4. James E. Girard, Criminalistics, Forensic science in crime.
5. Dr. M. S. Rao, Dr. B. P. Maithil, K. V. Ravikumar, Crime scene management M. Chatterjee and R. Shinde, Textbook of medical biochemistry, 6th Ed., Jaypee publication.
6. Michael M, Cox, David L, Nelson, Lehninger Principles of biochemistry.
7. Bergmeyer, Methods of enzymatic analysis.
8. Modi's Medical Jurisprudence and Toxicology-23rd Ed. Publisher-Lexis Nexis Butterworths Wadhwa.
9. Parikh's Textbook of Medical Jurisprudence, Forensic medicine, and Toxicology- C.K. Parikh, CBS Publishers, and Distributors.6th Ed.
10. A textbook of modern toxicology by Ernest Hodgson
11. Casarett & Doll Toxicology, The Basic Science of Poisons.
12. Clark, E.G.C.; Isolation and Identification of Drugs, Vol. I and Vol. II, Academic Press, (1986).
13. Cravey R.H, Baselt, R.C; Introduction to Forensic Toxicology, Biochemical Pub. Davis C A (1981).
14. Willard H. Instrumental Methods of Analysis 1974.
15. Analysis of Plant Poisons, Dr. M P Goutam.
16. Drug Abuse Handbook, Karch. s.
17. Indian Evidence Act, 1872
18. Criminal Procedure Code, 1973.
19. Indian Penal Code, 1860.
20. Bare Acts with short notes on the following: Narcotic Drugs & Psychotropic Substances Act, Drugs & Cosmetics Act, Explosive Substances Act,
21. Working Procedure Manual - Toxicology, BPR&D Publication (2000).
22. Quantitative inorganic analysis; Vogel.
23. Explosive (4th Rev. Ed); J. Kohler, Rudolf.
24. Scientific protocols for fire investigation; John J. Lentini.
25. DFS practical manual.
26. K. Mathiharan, Medical jurisprudence and toxicology
27. Rudin N. and Inman K, Introduction to Forensic DNA Analysis.
28. Forensic Science -2008, Embar-Seddon, A and Pass A (Ed), Volumes 1-3.
29. Buckleton J., Triggs C.M., Walsh, Forensic DNA evidence Interpretation
30. PCR protocols, 2nd edition, John M.S. Bartlett, David Stirling.
31. Essential Molecular Biology, Vol. 1, 2nd edition, T. A. Brown
32. Fundamentals of forensic science, 2nd edition, Max M. Houck, Jay A. Seigel.
33. Forensic biology by Richard li
34. B R Sharma, Firearms in criminal investigation and trials
35. Tom Warlow, Firearm, the law, and Forensic Ballistics
36. Laboratory Procedural Manual, Forensic Ballistics, DFS, New Delhi.
37. Laboratory Procedural manual, Physics Section, DFSL, Mumbai.