

Academic Council:
Item No.:

UNIVERSITY OF MUMBAI



Syllabus for Post Graduate Diploma in Forensic Science and Related Laws

(With effect from the Academic Year 2015-2016)

Revised Syllabus for Post Graduate Diploma in Forensic Science and Related Laws

- O : Title of the Course : Post Graduate Diploma in Forensic Science and Related Laws
- O : Eligibility : The candidate who has passed Bachelor Degree from any Faculty 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, BHMS, BDS.
- R : Duration of the Course : One Year (Full Time)
- R : Fee Structure : As Per the University Circulars
- R : Intake Capacity : 40 (Forty)
- R : Teacher Qualifications : As per the U.G.C./ State Government Norms
- R : Standard of Passing :
- a. Candidate who secures minimum 50% marks in each subject/paper be declared to have passed the examination in that subject.
 - b. A candidate who fails to secure 50% marks in a subject/Paper will be allowed to reappear in that subject/paper.
 - c. Candidate can carry forward at his/her option the marks in the subject/paper in which he/she has passed, in such a case student is entitled for award of class.
 - d. Candidate who secures a minimum of 50% marks in each paper and an aggregate of 60% and above marks on the whole shall be declared to have passed the examination in the First Class.
 - e. Candidate who secures a minimum of 50% marks in each paper and an aggregate of 70% and above marks on the whole shall be declared to have passed the examination in First Class with Distinction.
- Medium of Instruction : English

Fees Structure for P. G. Diploma in Forensic Science and Related Laws

Particular	Amount
Government share	460
University share	540
Other fees/ Extra-curricular activities	250
Laboratory fees	6000
Gymkhana fees	1000
Vice Chancellor's fund	400
Magazine fees	20
ID Card and Library Card	50
Group insurance	40
Student Welfare Fund	50
Univ sports and Cultural activities	30
Development fund	500
Disaster relief fund	10
Utility fees	250
Computer/ internet	500
E-suvidha	50
E- charges	20
Project fees	2000
Registration fees	875
Sub Total	13145
Refundable	
Caution money	150
Library deposit	250
Laboratory deposit	400
Sub Total	800
Total Rs.	13945
Wherever Applicable	
Form and Prospectus fees	100
Admission processing fees	200
Transfer Certificate	100
Bonafide Certificate	020
No Objection Certificate	020
Alumni Association Fees	100
(to be collected from the student at the time of admission)	

**Revised Syllabus for Post Graduate Diploma in Forensic Science
and Related Laws
Scheme of Examination**

Semester I

Paper	Title of Paper	Maximum Marks	Internal Assessment	University Assessment	Lectures (1 Hour Duration)	Paper Code
I	Fundamentals of Forensic Science I	100	40	60	60	PGDFS 101
II	Essentials of Forensic Science I	100	40	60	60	PGDFS 102
III	Prefecture of Forensic Science I	100	40	60	60	PGDFS 103
IV	Criminology and Law I	100	40	60	60	PGDFS 104
V	Practical in Forensic Science I	100	40	60	60	PGDFS 105
VI	Practical in Forensic Science II	100	40	60	60	PGDFS 106
---	Grand Total	600			360	---

Semester II

Paper	Title of Paper	Maximum Marks	Internal Assessment	University Assessment	Lectures (1 Hour Duration)	Paper Code
I	Fundamentals of Forensic Science II	100	40	60	60	PGDFS 201
II	Essentials of Forensic Science II	100	40	60	60	PGDFS 202
III	Prefecture of Forensic Science II	100	40	60	60	PGDFS 203
IV	Criminology and Law II	100	40	60	60	PGDFS 204
V	Practical in Forensic Science III	100	40	60	60	PGDFS 205
VI	Practical in Forensic Science IV	100	40	60	60	PGDFS 206
---	Grand Total	600		---	360	---

*Minimum 50% passing is required in Internal Assessment (min.20) and University assessment (min.30) for a student to be declared pass.

**P. G. Diploma in Forensic Science and Related Laws
To be implemented from Academic Year 2015-2016**

Scheme of Assessment

Theory

Assessment Type	Allocation of Marks	Total Marks
Internal Assessment	1. Periodical Class Test 20 Marks 2. Attendance and Participation 10 Marks 3. Overall Conduct 10 Marks	40 Marks
Semester End Examination	Question Paper Pattern - 1. Attempt any TWO of the following (Unit I) 12 Marks 2. Attempt any TWO of the following (Unit II) 12 Marks 3. Attempt any TWO of the following (Unit III) 12 Marks 4. Attempt any TWO of the following (Unit IV) 12 Marks 5. Attempt any THREE of the following (Unit I to IV) 12 Marks	60 Marks
Total		100 Marks

Practical

Paper	Allocation of Marks	Total Marks
V	Practical Paper Pattern- 1. Experiment No. 1 40 Marks 2. Experiment No. 2 40 Marks 3. Practical Journal 10 Marks 4. Viva 10 Marks	100 Marks
VI	Practical Paper Pattern- 1. Seminar presentation 10 Marks 2. Book review 10 Marks 3. Open book test 10 Marks 4. Field visit 20 Marks 5. Project Sem I 40 Marks (Introduction, Literature review, Progress report) Project Sem II (Materials and methods, Observations, Result) 6. Viva 10 Marks	100 Marks

**P. G. Diploma in Forensic Science and Related Laws Credits
To be implemented from Academic Year 2015-2016**

Semester I

Class	Title	Class Room Instruction Face to Face						50 Hours = 1 Credit				
		Per Week		15 Weeks (Per Semester)		Per Semester (Hours)		Notional (Hours)		Credits		Total Credits
		L (60 Min)	P (60 Min)	L	P	L	P	L	P	L	P	
PGDFS 101	Fundamentals of Forensic Science I	4		60		60		200		4		4
PGDFS 102	Essentials of Forensic Science I	4		60		60		200		4		4
PGDFS 103	Prefecture of Forensic Science I	4		60		60		200		4		4
PGDFS 104	Criminology and Law I	4		60		60		200		4		4
PGDFS 105	Practical in Forensic Science I		4		60		60		100		2	2
PGDFS 106	Practical in Forensic Science II		4		60		60		100		2	2
Total	--	16	08	240	120	240	120	800	200	16	04	20

P. G. Diploma in Forensic Science and Related Laws

Semester I- Theory

Course Code	Title	Credits
PGDFS101	Fundamentals of Forensic Science I	4
Unit No.	Contents of Unit	Lectures
Unit I	<p>History, Development and Fundamentals of Forensic Science</p> <p>1.1 Definition and Origin of term “<i>forensis</i>”</p> <p>1.2 Nature, need and scope</p> <p>1.3 Principles and laws of forensic science</p> <p>1.4 Global development of Forensic Science</p> <p>1.5 Sir Arthur Conon Doyle and other important contributors</p> <p>1.6 Forensic Science in India</p> <p>1.7 Chemical Examiner’s Laboratory</p>	15 hrs
Unit II	<p>Domains in Forensic Science</p> <p>2.1 Physics divisions- ballistics, voice, audio-video, automobiles engineering</p> <p>2.2 Questioned documents division- (stylistics, linguistics, counterfeit)</p> <p>2.3 Cyber division, superimposition, forensic artistry</p> <p>2.4 Fingerprint division (Prints and other impressions)</p> <p>2.5 Psychology (Criminal profiling, polygraphy, narco analysis, brain mapping)</p> <p>2.6 Crime scene investigation and reconstruction, forensic photography</p>	15 hrs
Unit III	<p>Crime Scene Management and Investigation</p> <p>3.1 Crime scene:- Importance, problems, location, nature of scene</p> <p>3.2 Types of crime scene</p> <p>3.3 Physical Evidences: Definition, Importance , Utility and sources</p> <p>3.4 Types of physical evidences (physical, chemical, biological and digital)</p> <p>3.5 CSI & CSM: First officer, Primary survey, Crime scene security</p> <p>3.6 Documentation : Photography, videography, note making and sketching</p> <p>3.7 Searching: General and advance searching, evidential photography</p>	15 hrs

Unit IV	Crime scene investigation 4.1 Forensic investigation in case of homicide 4.2 Forensic investigation in case of suicide 4.3 Forensic investigation in case of accidental and negligence death 4.4 Forensic investigation in case of road and vehicular accidents 4.5 Forensic investigation in case of rape and sexual assault	15 hrs
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Course Code	Title	Credits
PGDFS102	Essentials of Forensic Science I	4
Unit No.	Contents of Unit	Lectures
Unit I	Fingerprints and other impressions 1.1 History and development 1.2 Formation of friction ridges 1.3 Classification of fingerprints (Patterns) 1.4 Types of fingerprints (latent, patent and plastic) 1.5 Henry's classification system, extension of Henry's system 1.6 Single digit classification, Three levels of examination 1.7 Comparison of fingerprints- Class and Individual	15 hrs
Unit II	Questioned documents 2.1 Introduction 2.2 Principles of handwriting and document examination 2.3 Class and individual characteristics of handwriting 2.4 Various types of forgeries and their examination 2.5 Document- definition and significance 2.6 Handling, care and preservation of documents	15 hrs
Unit III	Forensic medicine 3.1 Introduction and forensic medicine and legal procedure 3.2 Medical law and ethics 3.3 Personal identification 3.4 Medico legal autopsy 3.5 Thanatology, death and its causes 3.6 Stages of death	15 hrs
Unit IV	Instrumentation 4.1 Microscopy: Compound, Comparison, Stereo, Fluorescence, SEM, TEM 4.2 Chromatography: Paper, TLC, HPTLC, GC, HPLC 4.3 Spectroscopy I: Electromagnetic radiations, Basic of Spectroscopy UV-Visible spectrophotometer	15 hrs

Paper Code	Title	Credits
PGDFS103	Prefecture of Forensic Science I	4
Unit No.	Contents of Unit	Lectures
Unit I	Forensic Physics and Ballistics 1.1 Introduction to Forensic ballistic 1.2 History of Firearms 1.3 Classification of firearms 1.4 Types of Ammunition, Projectiles, Mechanism of Firing 1.5 GSR-Detection methods and analysis 1.6 Gunshot wounds, Nature of Injuries – Entry and Exit wounds	15 hrs
Unit II	Forensic Chemistry and Toxicology 2.1 Introduction and Scope of Forensic Chemistry and Toxicology 2.2 Drugs of abuse: Introduction and classification 2.3 Analysis of alcoholic beverages, illicit liquor, breath-analyzer and its uses 2.4 Fire and arson: Definition and chemistry of fire 2.5 Investigation of fire scene, collection of evidences from fire scene and laboratory analysis of fire debris	15 hrs
Unit III	Forensic biology and serology 3.1 Examination of various body fluids- blood, semen, saliva, sweat, urine 3.2 Examination of various biological evidences- pollens, diatoms, hair, feathers 3.3 Introduction to wildlife forensics 3.4 DNA- Structure, coding and non coding DNA 3.5 PCR amplification, technology and methodology 3.6 Paternity testing	15 hrs
Unit IV	Digital Forensics 4.1 Computer Crimes- Definition 4.2 Types of computer crimes 4.3 Cyber Crimes- Definition 4.4 Types of cyber crimes 4.5 Computer security 4.6 Online security 4.7 Data retrieval	15 hrs

Course Code	Title	Credits
PGDFS104	Criminology and Law I	4
Unit No. Contents of Unit Lectures		
Unit I	Criminology 1.1 Historical records of crime and criminal law 1.2 Criminology and different schools of thought 1.3 Criminal behavior and its causes 1.4 Models of criminal behavior 1.5 Victimology and types of victim 1.6 Penology and capital punishment 1.7 Method of judicial execution (Method of death penalty world -wide)	15 hrs
Unit II	Criminal Justice System and Indian Penal Code,1860 2.1 Components of criminal justice system 2.2 Police system 2.3 Judicial System 2.4 Panchnama and Inquest, complaint, F.I.R., arrest, custody, bail 2.5 Fundamental rights of a person charged for crime 2.6 Indian Constitution – Article 20(3), 21, 22.	15 hrs
Unit III	Criminal Procedure Code, 1973 3.1 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	15 hrs
Unit IV	Special Acts 4.1 Arms Act ,1959 4.2 The Explosives Substance Act , 1908 4.3 Poisons Act , 1919	15 hrs

Course Code	Title	Credits
PGDFS105	Practical In Forensic Science I	2
Sr. No.	Title of Practical	Number of practical
1.	Practical based on fundamental Law and principle of Forensic science. i. Study of Locard's principle of exchange. ii. Study the Law of individuality.	02
2.	Practical based on crime scene management and investigation. i. Crime scene management: Primary survey, barrication, documentation (note making,)	01
3.	Practical based on Forensic Photography (Crime scene photography) i. Over all Photography: Bird eye view, angular photography and close-up photography ii. Evidential photography: With evidence number and scale, with and without light sources	02
4	Practical based on 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
5.	Practical based on questioned document examination. i. Study of handwriting characteristics ii. Examination of signature	02
6.	Practical based on Fingerprinting i. Taking of plain and rolled prints. ii. Development of latent prints (powder and iodine fuming)	02
7.	Practical based on Forensic Medicine i. Preservation of samples in medico-legal cases	01

8.	Practical based on Forensic biology i. Examination of various body fluids (blood, semen, urine, saliva)	01
9.	Practical based on Forensic chemistry and toxicology i. TLC of ink and dyes. ii. Color tests for drugs/ plant poison	02
10.	Practical based on Forensic physics and ballistics i. Examination of firearms and its parts ii. Examination of ballistic evidence under comparison microscope	02

Course Code	Title	Credits
PGDFS106	Practical In Forensic Science II	2
Sr. No.		
	Topic	Number
1.	Seminar Presentation	01
2.	Forensic Book Review (National)	03
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

**P.G. Diploma in Forensic Science and Related Laws Credits
To be implemented from Academic Year 2015-2016**

Semester II

Class	Title	Class Room Instruction Face to Face						50 Hours = 1 Credit				
		Per Week		15 Weeks (Per Semester)		Per Semester (Hours)		Notional (Hours)		Credits		Total Credits
		L (60 Min)	P (60 Min)	L	P	L	P	L	P	L	P	
PGDFS 201	Fundamentals of Forensic Science II	4		60		60		200		4		4
PGDFS 202	Essentials of Forensic Science II	4		60		60		200		4		4
PGDFS 203	Prefecture of Forensic Science II	4		60		60		200		4		4
PGDFS 204	Criminology and Law II	4		60		60		200		4		4
PGDFS 205	Practical in Forensic Science III		4		60		60		100		2	2
PGDFS 206	Practical in Forensic Science IV		4		60		60		100		2	2
Total	--	16	08	240	120	240	120	800	200	16	4	20

Semester II- Theory

Course Code	Title	Credits
PGDFS201	Fundamentals of Forensic Science II	4
Unit No.	Contents of Unit	Lectures
Unit I	<p>History, Development and Fundamentals of Forensic Science</p> <p>1.1 Anthropometric Bureau 1.2 Fingerprint Bureau 1.3 Department of explosives 1.4 Government Examiner of questioned documents 1.5 Central Detective Training School, National Crime Record Bureau 1.6 Bureau of Police Research and Development 1.7 Central and State Forensic Science Laboratories 1.8 Forensic Science Laboratories: Divisions and facilities provided</p>	15 hrs
Unit II	<p>Domains in Forensic Science</p> <p>2.1 Forensic Medicine (Pathology, odontology, anthropology, entomology, radiology, psychiatry, nursing) 2.2 Special domains (Forensic archaeology, forensic ornithology, forensic Geology, Forensic Paleontology) 2.3 Industrial forensic (analytical forensic , forensic accounting, forensic journalism, forensic cinematography, agro forensic, crop forensic, rural forensic, forensic gemology) 2.4 Emerging domains (Nuclear forensics, aeronautical forensic, space forensic, forensic genetics, underwater forensic, environmental forensic)</p>	15 hrs
Unit III	<p>Crime Scene Management and Investigation</p> <p>3.1 Handling of evidence: Collection, packaging, labeling and sealing 3.2 Forwarding and Transportation, storage and preservation of evidence 3.3 Chain of custody, closing photography 3.4 Evidence at forensic laboratory 3.5 Forensic analysis and interpretation of result 3.6 Forensic reports 3.7 Crime scene reconstruction</p>	15 hrs

Unit IV	Crime scene investigation 4.1 Forensic investigation in case of fire/ arson 4.2 Forensic investigation in case of pre and post blast 4.3 Forensic investigation in cases of narcotic and psychotropic substance 4.4 Forensic investigation in cold cases 4.5 Forensic investigation in case of theft, robbery, dacoity, burglary 4.6 Forensic investigation of cyber crime	15 hrs
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Course Code	Title	Credits
PGDFS202	Essentials of Forensic Science II	4
Unit No.	Contents of Unit	Lectures
Unit I	Fingerprints and other impressions 1.1 Latent print development, collection and preservation 1.2 Fingerprint development methods 1.3 Poroscopy, Ridgeoscopy, Edgeoscopy 1.4 Palm print, foot prints, footwear prints and gait pattern 1.5 Postmortem fingerprinting 1.6 AFIS- History, development and components	15 hrs
Unit II	Questioned documents 2.1 Classification of forensic documents: questioned, admitted and specimen writings 2.2 Examination of various documents – currency, bond papers, stamps, passport 2.3 Analysis of charred documents, indented and secret writing 2.4 Examination of various – typewriters, printers and photo copiers. 2.5 Instruments used in document examination	15 hrs
Unit III	Forensic medicine 3.1 Signs of death and changes following death 3.2 Injuries classification and medico legal aspects 3.3 Asphyxia and accidents 3.4 Death due to heat, cold and electrocution 3.5 Sexual offences 3.6 Forensic psychiatry	15 hrs
Unit IV	Instrumentation 4.1 Spectroscopy II: Basics of IR, FTIR, Raman and Mass spectroscopy 4.2 Elemental analysis: AAS, AES, XRD, XRF, NAA 4.3 Bio Analysis: PCR, Electrophoresis 4.4 Instrument related to crime scene investigation (crime light)	15 hrs

Paper Code	Title	Credits
PGDFS203	Prefecture of Forensic Science II	4
Unit No.	Contents of Unit	Lectures
Unit I	Forensic Physics and Ballistics 1.1 Bullet, Weapon and Cartridge case Identification 1.2 Postmortem examination of gunshot injuries 1.3 Introduction to Forensic physics and scope 1.4 Vehicular accidents 1.5 Primary causes of vehicular accidents 1.6 Investigation of vehicular accidents	15 hrs
Unit II	Forensic Chemistry and Toxicology 2.1 Explosives: Introduction and types of explosives 2.2 Investigation of crime scene related to explosives 2.3 Analysis of residue from explosives 2.4 Definition and classification of poisons 2.5 Collection and preservation of samples in poisoning cases 2.6 Extraction of poisons from various biological samples 2.7 Methods for screening and quantification of poisons	15 hrs
Unit III	Forensic biology and serology 3.1 Blood spatter pattern analysis 3.2 Forensic odontology- Definition, dentition, chronology of development and age determination, comparison and identification 3.3 Bite marks comparison, Forensic odontology in mass disasters 3.4 Forensic anthropology- Age, race and sex determination from skeleton (Skull, pelvic and long bones) 3.5 Forensic entomology- Identification of flies important in forensic entomology, life cycle of flies and beetles, significance of forensic entomology	15 hrs
Unit IV	Forensic Psychology 4.1 Narco-analysis- Theory, procedure, admissibility in court, future prospects, merits and demerits of the technique. 4.2 Brain Mapping- Theory, procedure, admissibility in court, future prospects, merits and demerits of the technique. 4.3 Polygraph- Theory, procedure, admissibility in court, future prospects, merits and demerits of the technique.	15 hrs

Course Code	Title	Credits
PGDFS204	Criminology and Law II	4
Unit No. Contents of Unit Lectures		
Unit I	Criminology 1.1 Crime and nature of crime 1.2 Ancient crime classification 1.3 Crimes against person, property and sexual offences 1.4 Color collar crimes 1.5 Organized crimes and its types 1.6 Emerging Crimes	15 hrs
Unit II	Indian Penal Code, 1860 2.1 IPC :Section284, 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 4.1 Narcotic Drugs and Psychotropic Substance Act , 1985 4.2 IT Act, 2005 4.3 Wildlife Protection Act 1972	15 hrs

Course Code	Title	Credits
PGDFS205	Practical In Forensic Science III	2
Sr. No.	Title of Practical	Number of practical
1.	Practical based on fundamental Law and principle of Forensic science. i. Study the Law of progressive change. ii. Study of principle of comparison.	02
2.	Practical based on crime scene management and investigation. i. Crime scene investigation : Searching of scene and marking of physical evidence, sketching (rough and final sketching)	01
3.	Practical based on Forensic Photography (Crime scene photography) i. Photography of corpse: Full body photography, injury ii. Closing photography: Photography for closing the scene	02
4	Practical based on collection of physical evidence. i. Collection of evidence at Scene of Crime (Documents/ Fingerprints/ Ballistics etc.) ii. Preservation of evidence according to their nature. iii. Packaging, sealing and forwarding the evidence to forensic science laboratory	03
5.	Practical based on questioned document examination. i. Examination of Indian currency and passport under VSC ii. Examination of various forgeries	02
6.	Practical based on Fingerprinting i. Henry's classification ii. Comparison of chance prints	02
7.	Practical based on Forensic Medicine i. Audio- Video record of post-mortem.	01
8.	Practical based on Forensic biology i. Examination of various evidences of biological origin (hair, fibers, pollen, diatoms) ii. Determination of age, sex and ethnicity (skull, dental structure, pelvic girdle, and long bones)	02
9.	Practical based on Forensic chemistry and toxicology i. Analysis of drug/ poison using UV- Visible spectrophotometer.	01

10.	Practical based on Forensic physics and ballistics i. Examination of various marks on ammunition for firearm linkage. ii. Examination and collection of physical evidences related to hit and run cases.	02
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Course Code	Title	Credits
PGDFS206	Practical In Forensic Science IV	2
Sr. No.	Topic	Number
1.	Seminar Presentation	01
2.	Forensic Book Review (International)	03
3.	Open book test	01
4.	Field Visit	01
5.	Project / Case Study (Materials and methods)	03
6.	Project / Case Study (Observations)	03
7.	Project / Case Study (Result)	03

Reference and Text Books:

1. B.R.Sharma,Forensic science in criminal investigation and trials.
2. Dr.R. Krushanamurti, Forensic science in crime investigation.
3. B.S.Nabar, Forensic science in crime investigation.
4. James E.Girad, Criminalistics, Forensic science in crime.
5. Dr.M.S.Rao, Dr.B.P.Maithil, K.V.Ravikumar, Crime scene managementM.Chattergee and R.Shinde, Text book of medical biochemistry, 6th Ed., Jypee 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, Redolf.
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 Recharh li
34. B R Sharma, Fire arms 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.