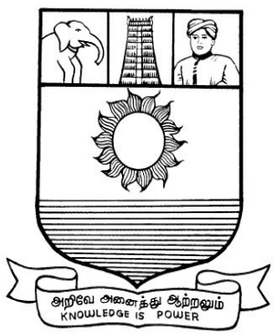
MANONMANIAM SUNDARANAR UNIVERSITY
TIRUNELVELI, TAMIL NADU, INDIA



B. Sc. CRIMINOLOGY AND FORENSIC SCIENCE

Choice Based Credit System (CBCS)
Incorporating the Learning Outcome Based Curriculum Framework (LOCF) Norms with Syllabus Pattern as recommended by Tamil Nadu State Council for Higher Education, Chennai

SYLLABUS

From the academic year 2024- 2025 onwards

MANONMANIAM SUNDARANAR UNIVERSITY

TIRUNELVELI, TAMIL NADU, INDIA

Bachelor of Science in Criminology and Forensic Science

Choice Based Credit System (CBCS) with
Learning Outcome based Curriculum Framework (LOCF) Norms and
Syllabus Pattern as recommended by Tamil Nadu State Council for Higher Education, Chennai

Scheme, Regulations and Syllabus

Title of the course

Bachelor of Science (B.Sc.) Degree course in Criminology and Forensic Science.

Duration of the course

Three years under semester pattern, with Choice Based Credit System, LOCF Norms and TANSCHE recommended syllabus pattern.

Programme Outcomes for the Course

On completion of the programme, students will be able to comprehend and complete the programme outcomes, such as

Eligibility

Candidates for the Degree of Criminology and Forensic Science should have passed higher secondary examination in Specific group conducted by the Board of Secondary Education, Government of Tamil Nadu or any other equivalent examination prescribed and accepted by the Syndicate / SCAA of the Manonmaniam Sundaranar University, Tirunelveli.

Program Out comes

PO 1	Propose novel ideas towards solutions to contemporary problems justifying with relevant facts and data.
PO 2	Develop scientific outlook and see the relevance of science concepts in allaspects of life.
PO 3	Identify, formulate and analyse complex scientific problems using principles of natural and applied sciences.
PO 4	Comprehend concepts, frameworks and inventions through various learning methods and effectively communicate them to others orally and in writing.
PO 5	Analyse critically the given scientific data, ascribe meaning to them and draw objective conclusions.
PO 6	Developing epithetical concern towards various social problems and ways to solve which will be very beneficial to society.
PO 7	Imbibe ethical, moral and social values to become cultured and civilized global citizens.
PO 8	Address social and environmental issues from sustainability perspective.

Programme Specific Outcomes

PSO 1	Articulate diverse aspects of forensic science like Criminology, Forensic Science, Criminal Law, Police administration, Forensic Physics, Forensic Chemistry, Forensic Biology, Economic offences, Human Rights and Criminal Justice System, and collection, preservation and evaluation of different types of evidences using scientific Methods and instrumentation.
PSO 2	Illustrate the functioning of the judicial system, police organizations, forensic Science laboratories, techniques involved in collection, preservation and evaluation of evidences.
PSO 3	Demonstrate the functioning and co- ordination/ co- operationalaspects of the allied sciences such as Forensic- Serology, Medicine and Toxicology, that assist in forensic investigation protocols and step by step development of the investigative procedures.
PSO 4	Differentiate between and among methods/protocols, instrumentation and evaluative procedures required in the investigative process that is required for crime solving and also document the same as per norms.
PSO 5	Recommend and develop various aspects of investigation protocols based on the type of crimes, evidences collected, evaluative procedures conducted and aid in solving cases keeping in mind the laws and justice systems pertaining to the same.

Structure of the programme:
Credit and Hours Distribution System for all UG courses including Lab Hours

FIRST YEAR
Semester-I

Part	List of Courses	Credit	No. of Hours
Part-1	Tamil or other Languages	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses [in Total]	13	14
Part-4	Skill Enhancement Course Course-1	2	2
	Foundation Course	2	2
		23	**30**

Semester-II

Part	List of Courses	Credit	No. of Hours
Part-1	Tamil or other Languages	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses including laboratory [in Total]	13	14
Part-4	Skill Enhancement Course- 2	2	2
	Skill Enhancement Course- 3 (Discipline / Subject Specific)	2	2
		23	**30**

SECOND YEAR
Semester-III

Part	List of Courses	Credit	No. of Hours
Part-1	Tamil or other Languages	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses including laboratory [in Total]	13	14
Part-4	Skill Enhancement Course- 4 (Entrepreneurial Based)	1	1
	Skill Enhancement Course- 5 (Discipline / Subject Specific)	2	2
	Environmental Studies	-	1
		22	**30**

Semester- IV

Part	List of Courses	Credit	No. of Hours
Part-1	Tamil or other Languages	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses including laboratory [in Total]	13	13
Part-4	Skill Enhancement Course- 6 (Discipline / Subject Specific)	2	2
	Skill Enhancement Course - 7 (Discipline / Subject Specific)	2	2
	Environmental Studies	2	1
		25	**30**

THIRD YEAR
Semester-V

Part	List of Courses	Credit	No. of Hours
Part-3	Core Courses including Project / Elective Based	22	28
Part-4	Value Education	2	2
	Internship / Industrial Visit / Field Visit	2	
		26	**30**

Semester-VI

Part	List of Courses	Credit	No. of Hours
Part-3	Core Courses including Project / Elective Based & LAB	18	28
Part-4	Extension Activity	1	-
	Professional Competency Skill	2	2
		21	**30**

Examinations

There will be an internal assessment comprising of tests, seminars and assignments and one End-semester examination during each semester. The internal assessments will form 25 % of the marks (including 15 marks for tests, 5 marks for assignments and 5 marks for seminar presentation) and the end semester examination will form 75 % of the total marks.

In select subjects the internal assessments will form 25 % of the marks (including 15 marks for CIA, 5 marks for assignments and 5 marks for seminar presentation), Internal Evaluation of Practical/ Report comprising of 25 % of the marks and the end semester examination will form 50 % of the total marks (Wherever applicable Viva Voce shall be considered for external evaluation)

QUESTION PAPER PATTERN – I

Time: Three hours Maximum: 75 Marks

PART – A (10X1=10 Marks)

Answer ALL the Questions,choose the correct answer.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

PART – B (5X5=25 Marks)

Answer ALL the Questions, choosing either (a) or (b), in about 150 words.

11. (a)
(or)
(b)
12. (a)
(or)
(b)
13. (a)
(or)
(b)
14. (a)
(or)
(b)
15. (a)
(or)
(b)

PART – C (5X8=40 Marks)

Answer ALL the Questions, choosing either (a) or (b), in about 250 words.

16. (a)
(or)
(b)
17. (a)
(or)
(b)
18. (a)
(or)
(b)
19. (a)
(or)
(b)
20. (a)
(or)
(b)

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QUESTION PAPER PATTERN – II

Time: Three hours Maximum: 50 Marks

PART – A (10X1=10 Marks)

Answer ALL the Questions, choose the correct answer.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

PART – B (5X3=15 Marks)

Answer ALL the Questions, choosing either (a) or (b), in about 100 words.

11. (a)

(or)

(b)

12. (a)

(or)

(b)

13. (a)

(or)

(b)

14. (a)

(or)

(b)

15. (a)

(or)

(b)

PART – C (5X5=25 Marks)

Answer ALL the Questions, choosing either (a) or (b), in about 200 words.

16. (a)

(or)

(b)

17. (a)

(or)

(b)

18. (a)

(or)

(b)

19. (a)

(or)

(b)

20. (a)

(or)

(b)

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Credit Distribution for UG Programmes

Sem I	Credit	H	Sem II	Credit	H	Sem III	Credit	H	Sem IV	Credit	H	Sem V	Credit	H	Sem VI	Credit	H
1.1 Part-1 Tamil or other Languages	3	6	2.1 Part-1 Tamil or other Languages	3	6	3.1 Part-1 Tamil or other Languages	3	6	4.1 Part-1 Tamil or other Languages	3	6	**5.1 Core Course IX**	4	5	**6.1 Core Course – XIII**	4	6
1.2 Part-2 English	3	6	2.2 Part-2 English	3	6	3.2 Part-2 English	3	6	4.2 Part-2 English	3	6	**5.2 Core Course X**	4	5	**6.2 Core Course XIV**	4	6
1.3 Core Course I	5	5	**2..3 Core Course III**	5	5	**3.3 Core Course V**	5	5	**4.3 Core Course VII Core Industry Module**	5	5	**5.3. Core Course XI**	4	5	**6.3 Core Course XV**	4	6
1.4 Core Course II	5	5	**2.4 Core Course IV**	5	5	**3.4 Core Course VI**	5	5	**4.4 Core Course VIII**	5	5	**5.4.Core Course –/ Project with viva-voce XII**	4	5	6.4 Elective VII Generic/ Discipline Specific	3	5
1.5 Elective I Generic/ Discipline Specific	3	4	2.5 Elective II Generic/ Discipline Specific	3	4	3.5 Elective III Generic/ Discipline Specific	3	4	4.5 Elective IV Generic / Discipline Specific	3	3	5.5 Elective V Generic/ Discipline Specific	3	4	6.5 Elective VIII Generic/ Discipline Specific	3	5
1.6 Skill Enhancement Course-1	2	2	2.6 Skill Enhancement Course-2	2	2	3.6 Skill Enhancement Course 4, (Entrepreneurial Skill)	1	1	4.6 Skill Enhancement Course 6	2	2	5.6 Elective VI Generic/ Discipline Specific	3	4	6.6 Extension Activity	1	-
1.7 Skill Enhancement - (Foundation Course)	2	2	2.7 Skill Enhancement Course 3	2	2	3.7 Skill Enhancement Course 5	2	2	4.7 Skill Enhancement Course 7	2	2	5.7 Naan Mudhalvan	2	2	6.7 Naan Mudhalvan	2	2
			4.8 Naan Mudhalvan	2	-	3.8 Environmental Studies	-	1	4.8 Value Education	2	1	5.8 Summer Internship /Indus Trag	2	-			
						3.9 Naan Mudhalvan	2	-	4.9 Naan Mudhal	2	-						

									van								
	23	**30**		**25**	**30**		**24**	**30**		**27**	**30**		**26**	**30**		**21**	**30**
Total – 146 Credits																	

Evaluation

METHODS OF EVALUATION		
Internal Assessment	Continuous Internal Assessment Test	**25 Marks**
	Assignments / Snap Test / Quiz	
	Seminars	
	Attendance and Class Participation	
External Assessment	End Semester Examination	**75 Marks**
IN SELECT COURSE WHERE PRACTICAL'S IS PART OF COURSE		
Internal Assessment	Continuous Internal Assessment Test	
	Assignments / Snap Test / Quiz	
	Seminars	**25 Marks**
Internal Evaluation-Practical's	Practical's and Record/ Report	**25 Marks**
Internal Assessment	Total Internal Evaluation	**50 Marks**
External Assessment	End Semester Examination Wherever Viva Voce is applicable it shall be considered for external evaluation	**50 Marks**
	Total	**100 Marks**
METHODS OF ASSESSMENT		
Remembering (K1)	Thelowestlevelofquestionsrequiresstudentstorecallinformationfromthe coursecontent Knowledgequestionsusuallyrequirestudentstoidentifyinformationinthetextbook.	
Understanding (K2)	Understandingoffactsandideasbycomprehendingorganizing,comparing,translating,interpolatingandinterpretingintheirownwords. Thequestionsgobeyondsimplerecallandrequirestudentstocombinedatatogether	
Application (K3)	Studentshavetosolveproblemsbyusing/applyingaconceptlearnedintheclassroom. Studentsmust usetheir knowledgetodetermineaexactresponse.	
Analyze (K4)	Analyzingthequestionisonethatasksthestudentstobreakdownsomething in toitscomponentparts. Analyzingrequiresstudentstoidentifyreasonscausesormotivesandreachconclusionsorgeneralizations.	
Evaluate (K5)	Evaluationrequiresanindividualtomakejudgmentonsomething. Questionstobeaskedtojudgethevalueofanidea,acharacter,aworkofart,orasolutiontoaproblem. Studentsareengagedindecision-makingandproblem–solving. Evaluationquestionsdonothavesinglerightanswers.	
Create (K6)	Thequestionsofthiscategorychallengestudentstogetengagedincreativeandoriginalthinking. Developingoriginalideasandproblem-solvingskills	

Note on Teaching Methodology

A. The teaching methodology adopted for the course will utilize participatory learning methods, like workshops, discussions, assignments, short education tours, seminars, peer teaching, and group work, apart from regular lectures.
B. The syllabus indicates the type of teaching method, to be adopted for a particular topic, in the footnote of the same page.
C. The method suggested is only indicative; the concerned course teacher can use other methods or a combination of many methods, in order to improve the quality of knowledge transfer.
D. Course teachers adopting participatory teaching methods may please take extra care on the following issues
    a) Set a brief, clear task rather than lecturing
    b) Use hands-on, multi-sensory materials rather than rely only on verbal communication
    c) Create an informal, relaxed atmosphere
    d) Choose growth-producing activities Evoke feelings, beliefs, needs, doubts, perceptions, aspirations
    e) Encourage creativity, analysis, planning
    f) Decentralize decision-making
E. The following portions give details of some contemporary techniques that may be followed by course teachers, who teach various subjects in criminology

1. BRAINSTORMING

Brainstorming is a familiar technique in which the teacher asks a specific question or describes a particular scenario, and students offer many different ideas. These ideas are then usually written on a flipchart or chalkboard and considered for further discussion.

2. CASE ANALYSIS

A case study is a written scenario that usually involves an important community situation. Since it is written beforehand, it can be specifically created to address relevant local issues.

3. DEMONSTRATIONS / PRACTICAL EXPOSURE

A demonstration is a structured performance of an activity to show, rather than simply tell, a group how the activity is done. This method brings to life some information that you may have already presented in a lecture.

4. DRAMATIZATION

A dramatization is a carefully scripted play where the characters act out a scene related to a learning situation. It is designed to bring out the important issues to be discussed or messages to be learned.

5. FISHBOWL

In a fishbowl discussion, most of the students sit in a large circle, while a smaller group of students sits inside the circle. The fishbowl can be used in two distinct ways:

- As a structured brainstorming session: Choose a specific topic based on the group's needs or interests. A handful of seats are placed inside a larger circle. Students who have something to say about the topic at hand sit in the center. Anyone sitting inside the fishbowl can make a comment, offer information, respond to someone else in the center, or ask a question. When someone from the outside circle has a point to make, he or she taps the shoulder of someone in the center and takes that person's seat. This continues, with people from the outside tapping and replacing people on the inside, as a lively brainstorm takes place. You will need to process the many ideas after the fishbowl exercise.
- For structured observation of a group process: Students in the fishbowl are given a specific task to do, while students outside the fishbowl act as observers of the group process. The inner group works on its task together, and the outer group is asked to note specific behaviours. To process the activity, ask the inner group to reflect on the group process, and ask the outer group to describe what they

observed.

6. GAMES

Games are appropriate participatory tools when they are used to encourage students to take charge of their own learning, and to test and reinforce new knowledge or skills. Adapt a popular game to convey or test knowledge of a particular topic, or create a new game to test or reinforce learning. Divide students into groups, if necessary, to play the game. Use games after information has already been shared using another method (e.g., lecturette, demonstration, jigsaw learning, etc.) or to assess students' knowledge at the start of a learning activity.

7. JIGSAW LEARNING

In a jigsaw activity, evenly divided groups are given a topic to learn (a piece of the puzzle to master). Once these small groups have mastered the content, the groups are reorganized so that each new group contains one member from each original group (now each group contains all essential pieces of the puzzle to put together). Each new group now contains an "expert" on the content that they have mastered in the original groups, and one at a time, each expert teaches the new content to the newly formed groups. The teacher then processes the activity and emphasizes key learning.

8. LECTURETTE

A lecturette is a short, oral presentation of facts or theory. No more than 15-20 minutes in length, the goal of a lecturette is to impart information in a direct, highly organized fashion. The course teacher presents knowledge on a topic, sometimes using flipcharts, computer software presentations or other media to guide the discussion.

9. PANEL DISCUSSIONS

This method usually involves the presentation of an issue by several teachers at a table in front of a group. Usually, each teacher speaks briefly on the topic and then a moderator solicits questions from the audience. The moderator introduces the presenters/ teachers, keeps the discussion on the topic and within time limits and summarizes the discussion at the end. Each teacher typically speaks for a set period of time (for example, five minutes). After all teachers have spoken, the moderator invites questions from students. At the end of the session, the moderator may summarize the discussion and thank the presenters for their participation.

10. ROLE PLAY

Role-plays are short interactions of students playing specific, predetermined roles to explore issues or practice skills. Roles are usually written out, and the teacher may help students playing the roles understand "who" they are to be. Role-plays are generally used after a period of instruction or discussion. For example, if students are learning communication skills, groups can role-play being assertive in typical situations (e.g., students in peer pressure situations, or people needing to access services in a clinic or office). Stop the role-play periodically and discuss what behaviors worked and what was difficult and allow the group to brainstorm different choices of behavior/words. The role-play may be done again, with the same person practicing or someone else trying.

11. SKIT

A skit is an impromptu performance by students to demonstrate something they know. Skits can be created by students to show concerns they have about such things as peer pressure, victim issues in their community or lack of resources. Give students a topic, the maximum length of the skit and the amount of time they have to prepare (depending on the complexity, 30 minutes or an afternoon, for example).

12. SMALL GROUP DISCUSSION

A small group discussion is a structured session in which three to six students exchange ideas and opinions about a particular topic or accomplish a task together. After the groups have had an opportunity to work together, they report the highlights of their work back to the large group, and the teacher helps the group process the activity. Begin the learning activity by briefly presenting a topic to the large group. Then, divide the group into smaller groups and set a clear task for the small groups to accomplish. Write directions, goals and time allotted for the task on a chalkboard, flipchart or handout. As groups are working, walk around and listen in briefly to each group. Keep groups focused by announcing the time remaining periodically. After the small group work, students typically reassemble in the large group and a representative from each small group shares their

findings to the large group for a whole group discussion. Help the group process the activity to be sure the intended message was conveyed.

Reading list for Participatory Teaching Methodology

Cross, K. P. (1991). Effective College Teaching. ASEE Prism, (1)2, 27-29.

Eitington, Julius E. (2002) *The Winning Trainer: Winning Ways to Involve People in Learning.* Boston: Butterworth Heinemann.

Hamer, L.O. (2000). The Additive Effects of Semi-structured Classroom Activities on Student Learning: An Application of Classroom-Based Experiential Learning Techniques. Journal of Marketing Education, (22)1, 25-34.

Holzer, S. M. &Andruet, R.H. (2000). Active Learning in the Classroom. Proceedings, ASEE Southeastern Section Annual Meeting, April 2-4, 2000.

Kolb, David A. (1984). Experiential Learning. New York: Prentice-Hall, Inc.

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Newstrom, John W. (1993) *Even More Games Trainers Play.* New York: McGraw-Hill, Inc.

Pike, Bob and Christopher Busse. (1995) *101 Games for Trainers: A Collection of Best Activities from Creative Training Newsletter.* Minneapolis, MN: Lakewood Publications.

Pretty, J N, Guijt I, Thomson, J and Scoones, I (1995) A Trainer's Guide for Participatory Learning and Action.

Silberman, Mel. (1995). *101 Ways to Make Training Active.* San Francisco: Jossey-Bass Pfeiffer.

Srinivasan, Lyra. (1990) *Tools for Community Participation: A Manual for Training Trainers in Participatory Techniques*. Washington, DC: PROWWESS/UNDP.

*Technology of Participation: Group Facilitation Methods: Effective Methods for Participation. (*2000) Phoenix, AZ: Institute for Cultural Affairs.

B.Sc. Criminology and Forensic Science
Abstract of the Syllabus 2024-2025

SEMESTER I

				Maximum Marks				Passing Marks	
Subject Part	**Title of the Subjects**	**Hrs/ Week**	**Credits**	Int	Practicals	Ext	Total	Min	Max
1.1 Part 1 Language	Tamil/Other Languages	6	3	25	-	75	100	40	100
1.2 Part 2 English	English	6	3	25	-	75	100	40	100
1.3 Core Course I	Fundamentals ofCriminology and Criminal Justice	5	5	25	-	75	100	40	100
1.4 Core Course II	Introduction to ForensicScience	5	5	25	-	75	100	40	100
1.5 Elective I	Police Administration and Investigation	4	3	25	-	75	100	40	100
1.6 SEC- 1	Forms of Crime	2	2	25	-	75	100	40	100
1.7 Skill Enhancement (Foundation Course)- Practical's	Visit to Institutions and Scene of Crime	2	2	**25**	**-**	**75**	100	40	100
Sub Total Credits		**30**	**23**						

SEMESTER II

				Maximum Marks				Passing Marks	
Subject Part	**Title of the Subjects**	**Hrs/ Week**	**Credits**	Int	Practicals	Ext	Total	Min	Max
2.1 Part 1 Language	Tamil/Other Languages	6	3	25	-	75	100	40	100
2.2 Part 2 English	English	6	3	25	-	75	100	40	100
2.3 Core Course III	Technological Methods in Forensic Science	5	5	**50**	**-**	**50**	100	40	100
2.4 Core Course IV	Questioned Documents	5	5	25	-	75	100	40	100
2.5 Elective II	Criminal Laws	4	3	25	-	75	100	40	100
2.6 SEC- 2	Forms of Cybercrimes	2	2	25	-	75	100	40	100
2.7 SEC- 3 Practical's	Forensic Science- Lab	2	2	25	-	75	100	40	100
2.8NM *	Naan Mudhalvan	-	2						
Sub Total Credits		**30**	**25**						

* Examinations and scoring as per the Naan Mudhalvan Scheme

SEMESTER III

				Maximum Marks				Passing Marks	
Subject Part	**Title of the Subjects**	**Hrs/ Week**	**Credits**	Int	Practicals	Ext	Total	Min	Max
3.1 Part 1 Language	Tamil/Other Languages	6	3	25	-	75	100	40	100
3.2 Part 2 English	English	6	3	25	-	75	100	40	100
3.3 Core Course V	Basics of Digital Forensic	5	5	25	-	75	100	40	100
3.4 Core Course VI	Dactylography	5	5	25	-	75	100	40	100
3.5 Elective III	Juvenile Justice and Child Protection	4	3	25	-	75	100	40	100
3.6 SEC- 4 (Entrepreneurial Skill)	Criminalistics Services and Entrepreneurship	1	1	25	-	75	100	40	100
3.7 SEC 5- Practical's	Fingerprint Examination-Lab	2	2	25	-	75	100	40	100
3.8 EVS	Environmental Studies	1	-	-	-	-	-	-	-
3.9NM *	Naan Mudhalvan	-	2						
Sub Total Credits		**30**	**24**						

* Examinations and scoring as per the Naan Mudhalvan Scheme

SEMESTER IV

				Maximum Marks				Passing Marks	
Subject Part	**Title of the Subjects**	**Hrs/ Week**	**Credits**	Int	Practicals	Ext	Total	Min	Max
4.1Part 1 Language	Tamil/Other Languages	6	3	25	-	75	100	40	100
4.2 Part 2 English	English	6	3	25	-	75	100	40	100
4.3 Core Course VII	Forensic Physics and Ballistics	5	5	25	-	75	100	40	100
4.4 Core Course VIII	Research Methods andCase Studies	5	5	25	-	75	100	40	100
4.5 Elective IV	Fundamentals of Victimology	3	3	25	-	75	100	40	100
4.6 SEC- 6	Forensic Serology	2	2	25	-	75	100	40	100
4.7 SEC 7- Practical's	Forensic Physics- Lab	2	2	25	-	75	100	40	100
4.8 VBE	Value Education	1	2	25	-	75	100	40	100
4.9 NM *	Naan Mudhalvan	-	2						
Sub Total Credits		**30**	**27**						

* Examinations and scoring as per the Naan Mudhalvan Scheme

SEMESTER V

				Maximum Marks				Passing Marks	
Subject Part	**Title of the Subjects**	**Hrs/ Week**	**Credits**	Int	Practicals	Ext	Total	Min	Max
5.1 Core Course IX	Fundamentals of Forensic Medicine and Toxicology	5	4	**50**	**-**	**50**	100	40	100
5.2 Core Course X	Local and Special Laws	5	4	25	-	75	100	40	100
5.3 Core Course XI	Forensic Chemistry	5	4	25	-	75	100	40	100
5.4 Core Course XII-	Project- Dissertation or Case Studies	5	4	25	-	75	100	40	100
5.5 Elective V	Basics of Forensic Psychology	4	3	25	-	75	100	40	100
5.6 Elective VI- Practical's	Forensic Chemistry- Lab	4	3	25	-	75	100	40	100
5.7 NM *	Naan Mudhalvan	2	2						
5.8 Summer Internship/ Industrial Training	Mini Project- Internship	-	2	25	-	75	100	40	100
Sub Total Credits		**30**	**26**						

* Examinations and scoring as per the Naan Mudhalvan Scheme

SEMESTER VI

				Maximum Marks				Passing Marks	
Subject Part	**Title of the Subjects**	**Hrs/ Week**	**Credits**	Int	Practicals	Ext	Total	Min	Max
6.1 Core Course XIII	Forensic Biology	6	4	25	-	75	100	40	100
6.2 Core Course XIV	DNA Forensic	6	4	25	-	75	100	40	100
6.3 Core Course XV	Forensic Anthropology	6	4	25	-	75	100	40	100
6.4 Elective VII- Practical's	Penology and Correctional Administration	5	3	25	-	75	100	40	100
6.5 Elective VIII Practical's	Forensic Biology- Lab	5	3	25	-	75	100	40	100
6.6 Extension Activity	Extension Activity	-	1	-	-	-	-	-	-
6.7 NM *	Naan Mudhalvan	2	2						
Sub Total Credits		**30**	**21**						
Total Credits for 6 Semester (Three Years) is 146									

* Examinations and scoring as per the Naan Mudhalvan Scheme

I SEMESTER

CORE COURSE I
FUNDAMENTALS OF CRIMINOLOGY AND CRIMINAL JUSTICE

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core I		**Fundamentals of Criminology and Criminal Justice**	4	1	0	5

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *This course will expose the introductory concepts of crime and criminology along and emphasizes on analyzing multidisciplinary nature of criminology with some most prominent social science disciplines. Through this course students will be introduced to various schools or criminological thoughts and their importance. This paper enables students to understand the functioning of criminal justice system in India. The course also emphasizes on explaining typologies of crime and criminals along with latest trends of crime cases in India recorded under respective crime statistics institutions.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Introduce the concept of crime, its nature and scope	K1
CO2	Introduction to criminology its origin and the interdisciplinary nature of Criminology	K2
CO3	Critically identify the contribution each school of thought for the growth and development of Criminology.	K2
CO4	Understanding different typologies of crime including crimes against human body, property and types of offenders.	K3
CO5	Exploring crime statics of new crimes in the modern era and studying statistical institutions of criminological importance in India.	K4 K5
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

Unit-I: Crime Basic Concepts

Crime-Definitions; Forms of crime, Elements of Crime, Mens Rea, Actus Reus, Male Inse, Mala Prohibita; Tort, Sin, Deviance and Abnormal Behaviour.

Unit-II: Crime and Criminal Typology

Introduction to crimes against persons and crimes against property; Adult and Juvenile – Habitual offenders, Professional offenders, and violent offenders

Unit-III: Criminology and Allied Fields

Criminology, historical perspectives; nature, origin and scope, Criminology as a social science, Relations with other Social Sciences, Medicine & Law subjects

Unit-IV: Schools of Criminology
Pre-classical, Classical, Neo-Classical, Positive, Cartographic, Biological and Constitutional School.

Unit-V: Criminal Justice System
Structure of Criminal Justice System in India; Roles of legislature, police, judiciary and prison system in Criminal Justice; Cooperation and coordination among the various sub systems of criminal justice system. Crime Trends in India- Crimes in India: Statistics, Crime Clock, Crime rate, National Crime records Bureau, State Crime records Bureau, and District crime records bureau; Crime patterns and Trends in India (latest trends should be introduced).

RECOMMENDED READINGS

Ahmed Siddique, (1993), *Criminology, Problems and Perspectives*, III Edn. Eastern Book House, Lucknow.

Brendan Maguire & Polly F. Radosh, (1999), *Introduction to Criminology*, Wadsworth Publishing Company, Boston, U.S.A.

Chockalingam, K. (1997), *'Kuttraviyal'* (Criminology) in Tamil, Parvathi Publications, Chennai.

Edwin H. Sutherland and Donald R. Cressey (1974), *Principles of Criminology*, Lippincott, Philadelphia.

George Vold and Thomas J. Bernard, (1986), *Theoretical Criminology*, Oxford University Press, New York

Harries, K., (1999) *Mapping Crime – principle and practice*, Crime Mapping Research Center, National Institute of Justice, U.S Department of Justice, Washington, DC

Harry Elmer Barnes and Negley K. Teeters, (1966), *New Horizons in Criminology, Prentice Hall*, New Delhi.

Paranjepe, N.V., (2002). *Criminology and Penology*, Central Law Publications, Allahabad.

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	Low	High	Low	Medium	Low	High	Medium
CO2	Medium	High	High	Medium	Low	Low	High	Medium
CO3	High	Medium	High	Low	Medium	Medium	Medium	Medium
CO4	Medium	High	Medium	Low	Low	Low	High	Medium
CO5	High	Low	High	Low	Medium	Low	High	Medium
Correlation Levels: Low Medium High								

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	Low	High	Low	Medium
CO2	High	Low	High	Low	Medium
CO3	Medium	High	Medium	Low	Low
CO4	Medium	Low	Low	High	Medium
CO5	Low	Medium	Low	High	Medium
Correlation Levels: Low Medium High					

CORE COURSE II
INTRODUCTION TO FORENSIC SCIENCE

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core II		**Introduction to Forensic Science**	4	1	0	5

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- This course would introduce the students to History of Forensic Science and its development in India. The students would be appraised about the Principles of Forensic Science. They would also acquire knowledge regarding domains of forensic science across the globe along with organizational setup of forensic institutions the services provided by the Forensic Laboratories.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand the significance and Historical development of Forensic science	K2
CO2	Exploring the Organizational setup of Laboratories and some relevant allied intuitions working forensic science.	K1 K2
CO3	Understand various Trace evidences and knowing the scientific procedures related to trace evidences	K2
CO4	Analysing questioned documents and scientific methods of examination	K4
CO5	Evaluation of crime scene management and various processes involved in detection of crime.	K4 K5
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

Unit-I: Forensic Science

Definitions and concepts in forensic science. Scope of forensic science. History of Development of Forensic Science in India Functions of various divisions of forensic science laboratory. Pioneers in Forensic Science. Basic principles of forensic science; Locard's Principle, Frye Principles and Daubert Standard.

Unit-II: Forensic Science Establishments

Hierarchical set up of Forensic Science Laboratories in India (Central and State bodies)- DFSS- CFSL, SFSL, RFSL, DFSL, MFSL; Allied Institutions in India - NICFS, CDTS, PTA, NCRB, BPRD, Forensic science in international perspectives, including set up of INTERPOL and FBI.

Unit-III: Trace Evidence

Meaning, Locard's principle of exchange, Importance and Collection of various trace evidence - Hair, Fiber, Fabric, Glass, Paint, Soil, Powders, Gunshot Residues, Detective Dyes.BSA, 2023- Witnesses, and Admissibility of the Evidence in the Court.

Unit-IV: PhysicalEvidence

Classificationofphysicalevidence–classandindividualcharacteristics.Identification andindividualizationofphysicalevidence.Locard'sPrincipleofexchangeVarietiesof trace evidence– Pollens, fibers, metal fragments, Paint, Soil, glass particles, dust andairborne particles etc., their significance.Footwear impressions: Tyre marks, skid marks– tool marks and their significance.

Unit -V: Crime Scene Management

Crime Scene - Indoor and Outdoor, Primary and Secondary, Conveyance Crime Scene; Evidences. General crime scene procedures- Note of Observation, Searching, Photography, Videography, Sketching; Physical evidences: their types, significance, Chain of custody. Crime Scene Reconstruction (CSR).

RECOMMENDED READINGS:

R. Saferstein, *Criminalistics*, 8th Edition, Prentice Hall, New Jersey (2004).

W.J. Tilstone, M.L. Hastrup and C. Hald, *Fisher's Techniques of Crime Scene Investigation*, CRC Press, Boca Raton (2013).

B.B. Nanda and R.K. Tiwari, *Forensic Science in India: A Vision for the Twenty First Century*, Select Publishers, New Delhi (2001).

M.K. Bhasin and S. Nath, *Role of Forensic Science in the New Millennium*, University of Delhi, Delhi (2002).

S.H. James and J.J. Nordby, *Forensic Science: An Introduction to Scientific and Investigative Techniques*, 2nd Edition, CRC Press, Boca Raton (2005).

W.G. Eckert and R.K. Wright in *Introduction to Forensic Sciences*, 2nd Edition, W.G. Eckert (ED.), CRC Press, Boca Raton (1997).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Medium	High	High	Low	Medium	High	High	Low
CO2	Low	High	Low	Medium	Low	High	High	Medium
CO3	Medium	Medium	Medium	Low	Low	Medium	High	Low
CO4	Low	Low	Medium	Low	Low	High	Medium	Low
CO5	Medium	Low	High	High	Low	High	High	High
Correlation Levels: Low Medium High								

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	Medium	Medium	High
CO2	Low	Medium	Low	Medium	Low
CO3	High	High	High	Low	Medium
CO4	Low	Medium	Low	Low	High
CO5	Medium	Low	Medium	High	High
Correlation Levels: Low Medium High					

ELECTIVE I GENERIC/ DISCIPLINE SPECIFIC
POLICE ADMINISTRATION AND INVESTIGATION

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Elective I		**Police Administration and Investigation**	3	1	0	3

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *Through this paper would like to introduce the concept of policing and its origin in India. This enables the student to know the organization & the administration of the police sector across India. This course will also make the students aware about various police institutions established in India and their role. The duties, power of the police will all be the part of the knowledge of this paper.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand the history and development of policing in India.	K1 K2
CO2	Describing structures of Indian police in India	K1 K2 K3
CO3	Exploring the processes of recruitment and training of police officers of various ranks in India	K2
CO4	Become familiar with police organization working at state level and their importance	K3
CO5	Understand the powers, duties and investigation police officers.	K4 K5
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

Unit-I: Basics of Police Administration

History of Indian Police – Policing in Ancient, Medieval and Modern India- Police Act of 1861- Police Duties and Powers, Arrest, search, locking up and remand of suspected and accused persons.

Unit-II: Structure of Indian Police

Structure of State Police – District Police– City Police. Central Police Organizations - CBI, CISF, CRPF, RPF etc.Police research and Crime Statistics Organizations– BPR&D, NCRB.Village police, Railway and Armed Police.

Unit-III: ProcessesRecruitment and Training

Recruitment and Training- Constables, Sub-inspector, Deputy Superintendents of Police; IPS; Law and order.Police Station Management and its records. Maintenance and detection of crimes.

Unit-IV: State Special Police Organizations

Tamil Nadu Special Investigation team, Special Branch, Q Branch, Crime Branch, Anti-Dacoity cell, Video Piracy Cell, Narcotic Intelligence Bureau, Idol wing and Economic Offences wing.

Unit-V: Methods of Investigation

Methods of Investigation– Information, Interrogation and instrumentation. Modus Operandi, Police Dogs, Polygraph, Portrait building. Search and Seizure.

RECOMMENDED READINGS:

Bayley, D.H. (1969), *The Police and Political Development in India*, Princeton University Press, Princeton.

Diaz, S.M., (1976), *New Dimensions to the Police Role and Functions in India,* Published by the National Police Academy, Hyderabad.

Edelston, C.D. & Wicks, R.I. (1977), *An Introduction to Criminal Justice*, McGraw Hill.

Krishna Mohan Mathur, (1994), *Indian Police, Role and Challenges*, Gyan Publishing House, New Delhi.

Hermann Mannheim, (1973), *Comparative Criminology*, Vol. 1 & 2, Routeldge&Kegan Paul.

Levoneet. al. (1980), *Criminal Justice: A Public Police Approach*, Jovanovich Publishers, Harcourt Brace.

Morley, W.H., (1958), *Administration of Justice in India*, New Delhi, Metropolitan.

Nehad Ashraf, (1992), *Police and Policing in India*, Common Wealth Publishers, New Delhi.

Parmar M.S., (1992), *Problems of Police Administration*, Reliance Publishing House, New Delhi.

Sethi, R.B., (1983), *The Police Acts*, Law Book Co., Allahabad.

Vanamamalai, N.T., (1980), *Law and Justice in the U.S.,* Sterling Publishers Pvt., Ltd., New Delhi.

VenugopalRao S., (1991), *Criminal Justice – Problems and Perspectives in India,* Konark Publishers Pvt. Ltd., New Delhi.

1979 – 82, *Report of the National Police Commission* in 8 parts, Central Govt. Publications.

1955, 1975, 1985, *U.N. Standard Minimum Rules* on various matters connected with Criminal Justice.

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	Low	Medium	Low	High	Low	Low	Medium
CO2	High	Medium	Low	Low	High	High	Medium	Low
CO3	High	Low	Medium	Medium	Medium	Medium	Low	Medium
CO4	Medium	Low	Low	Low	High	High	Low	Low
CO5	High	High	Medium	Low	High	Low	Low	Medium
Correlation Levels: Low Medium High								

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	Medium	High	Low	Medium
CO2	Medium	Low	High	Low	Medium
CO3	High	High	Low	Medium	Low
CO4	Medium	Low	High	High	Low
CO5	Low	Medium	Low	High	Medium
Correlation Levels: Low Medium High					

SKILL ENHANCEMENT COURSE 1
FORMS OF CRIME

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
SEC 1		**Forms of Crime**	2	0	0	2

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- To introduce the students to the contemporary forms of crimes that society faces. To introduce the students to the traditional forms of crimes that society faces. To understand the collar crimes. To describe the organised crimes across the world. To explain the forms of terrorism.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcome	Cognitive Levels
CO1	Appreciate the difference between conventional and contemporary forms of crime	K1 K2
CO2	Understand the impact of organised crimes in a society	K2
CO3	Appreciate the impact of victimless crime	K3
CO4	Develop some workable counter measure to contemporary forms of crime	K2 K4 K5
CO5	Develop comprehensive preventive measures to combat crimes.	K1 K2
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

Unit-I: Conventional Crimes

Crimes against property – Theft – Robbery – Dacoity. Crimes against persons: Murder, Rape, Assault, Kidnapping and Abduction.

Unit II: White Collar Crime

Collar Crimes; White Collar Crime[1]– Causes– Societal Reaction– Corporate Crimes– Corruption, Tax Evasion, Counterfeiting, Frauds by banking and non-banking institutions, Insurance frauds and other economic offences.Cyber Crimes: Phishing, Crimes against women in cyberspace, cyber bullying, cyber stalking, Identity Frauds etc.

Unit III: Organized Crimes

Definition and characteristics of Organized Crimes[2], Organization and Structure of Criminal gangs, Crime syndicate, Racketeering. Automobile theft, Gambling, Political Graft, Drug trafficking – Golden Crescent and Triangle. Environmental Crimes, Narco-Terrorism.

[1] Fish Bowl
[2] Seminar

Unit IV: Terrorism

Terrorism[3]– Origin – Causes and Consequences. Forms– Revolutionary, Nationalist, and Bio-Terrorism. Different types of Terrorist manifestations in India– Extremism. Militancy, Naxalite, and Insurgency.

Unit V: Victimless Crimes

Prostitution, Homosexuality, Alcoholism[4] and Drug Abuse[5]. NDPS Act. Treatment of Addicts – Various Anonymous Programmes and De-addiction Centres.

RECOMMENDED READINGS:

Ahmed Siddique, (1993), *Criminology, Problems and Perspectives*, III Edn., Eastern Book House, Lucknow.

Allen, Friday, Roebuck and Sagarin, (1981), *Crime and Punishment: An introduction to Criminology.* The Free press. New York.

Brendan Maguire & Polly F. Radosh, (1999), *Introduction to Criminology*, Wadsworth Publishing Company, Boston, U.S.A.

Chockalingam, K. (1997), *'Kuttraviyal'* (Criminology) in Tamil, Parvathi Publications, Chennai.

Edwin H. Sutherland and Donald R. Cressey (1974), *Principles of Criminology*, Lippincott, Philadelphia.

Harry Elmer Barnes and Negley K. Teeters, (1966), *New Horizons in Criminology, Prentice Hall*, New Delhi.

John E.Conklin, J.E., (1981), *Criminology*, Macmillan, London.

Mahesh Chandra, (1979), *Socio-Economic Crimes*. N.M. Tripathi, Bombay

Mishra H.B., (1999) *Terrorism, Threat to peace and harmony*, Authors press Pub of Scholarly books, Delhi, 1999.

Omprakash, S., (Ed) (1997) *Terrorism in India*, Ess Ess Publications.

Paranjepe, N.V., (2002). *Criminology and Penology*, Central Law Publications, Allahabad.

Debarati Halder and K. Jaishankar (2011) *Cybercrime and the Victimization of Women: Laws, Rights, and Regulations*. Hershey, PA, USA: IGI Global.

K. Jaishankar (Ed.) (2011). *Cyber Criminology:Exploring Internet Crimes and Criminal behavior*. Boca Raton, FL, USA: CRC Press, Taylor and Francis Group.

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	Low	Medium	Low	High	Low	Medium
CO2	High	High	Medium	Low	Low	High	Medium	Low
CO3	Medium	High	Low	Medium	Medium	High	Low	Medium
CO4	High	Medium	Low	Low	Low	Medium	Low	Low
CO5	High	High	High	Medium	Low	High	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	Medium	High	High	Medium	High

[3] Panel Discussion
[4] Role play
[5] Practical Exposure to NGOs working in the area

CO2	Low	Medium	Low	Medium	Low
CO3	High	High	Low	Low	Medium
CO4	Low	Medium	High	Low	High
CO5	Medium	Low	Low	Medium	High
Correlation Levels:		**Low**	**Medium**	**High**	

SKILL ENHANCEMENT FOUNDATION COURSE
VISIT TO INSTITUTIONS

Course Code	**Sub Code**	TITLE OF THE COURSE	L	T	P	C
SEFC		**Visit to Institutions and Scene of Crime**	0	0	2	2

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- To understand the role of Criminal Justice Agencies and its allied fields. To understand the functions of Criminal Justice Agencies and its allied fields. To understand the concept of employability quotient and its related concepts in the field. To understand managerial and other skills required to work in criminal justice agencies and its allied fields. To develop the individual report writing skills.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	**Course Outcomes**	**Cognitive Levels**
CO1	Appreciate role and duties of Criminal Justice Agencies and its allied fields.	K1
CO2	Acknowledge the functions of Criminal Justice Agencies and its allied fields	K3
CO3	Understand the core work carried out the criminal justice agencies	K4 K5
CO4	Familiarise the records of criminal justice agencies and its allied fields.	K2 K4 K5
CO5	Students will be able to record the observations as individual report.	K1 K2
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

The students, under the guidance of a teacher may be taken on visit to **any 5** of the following institutions **based on the permissions from the authorities**:

- Forensic Science Laboratory- CFSL, SFSL, DFSL, MFSL
- Private Forensic Science Laboratory
- Scene of Crime
- Forensic Medicine Department
- Police Station
- Magistrates Court
- Fire Station
- District Crime Records Bureau
- Prisons

- Vigilance Home
- Juvenile Justice Board
- Observation Home or Special Home
- Institutions for the treatment of drug addicts
- Simulation- Scene of Crime and other related institutions and agencies.

The students will undertake the visits under the guidance of a faculty and will prepare a detailed report for evaluation for the final examination. Along with this each student shall prepare minimum of three case studies (if possible) and present it before the examiners.

Details of the evaluation procedure

- Each candidate has to submit a field visit report (Visits including Criminal Justice Agencies, Forensic Labs, NGO's and Scene of Crime) and should appear for a viva voce before the external examiner, teachers and class mates.
- The students, after their visits will submit a record of their field visits which will be evaluated at two levels.
- At the **first level,** for continuous assessment, the teacher will evaluate the students for 25 marks on the following criteria
    - Regularity in attending the visits (10 marks)
    - Regularity in submission of reports (5 marks)
    - Quality of the reports (10 marks).

- At the **second level,** during the end semester examination, the evaluation will be done by a panel of internal and external examiners for 75 marks.

    - A viva voce, where other semester students will be the audience
    - The students will be evaluated on the following criteria
        - Content of presentation (25 marks)
        - Presentation skills (25 marks)
        - Ability to defend the questions (25 marks).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	Low	High	High	High	Low	Low
CO2	High	Low	Medium	High	High	Low	Medium	High
CO3	Medium	Medium	Low	High	High	Medium	Low	High
CO4	Low	Medium	Low	Medium	Medium	Medium	Low	Medium
CO5	Low	High	High	Low	Low	High	High	Low
Correlation Levels: Low Medium High								

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	Medium	Medium	High
CO2	Medium	Low	Low	Medium	Low
CO3	High	High	High	Low	Medium
CO4	Medium	Low	Low	Low	High
CO5	Low	Medium	Medium	High	High
Correlation Levels: Low Medium High					

SEMESTER II

CORE COURSE III

TECHNOLOGICAL METHODS IN FORENSIC SCIENCE

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core III		**Technological Methods in Forensic Science**	3	0	2	5

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- The main objective of the course it to introduce the student's scientific Knowledge of microscopy, chromatography, spectroscopy, and electrophoresis & Forensic Photography as instrumental methods used in forensic investigation.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand the application of microscopic Instruments in Forensic Investigation	K1 K2
CO2	Apply Chromatographic techniques in Analysis of Evidences in Investigation	K3
CO3	Analyze the Forensic Application of spectroscopic instruments	K4 K5
CO4	Evaluate the efficiency of Electrophoresis techniques in Scientific Examination of Evidences	K5
CO5	Practice Forensic Photography and use it in Forensic in crime investigation	K4 K5
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit-I: Microscopy

Fundamental working principles and Forensic Significance of Microscope, Compound Microscope, Polarized Light Microscopy, Comparison Microscope, Stereo-zoom Microscope. Transmission Electron Microscope, Scanning Electron Microscope

Unit-II: Chromatographic Techniques

Fundamental working principles and Forensic Significance ofThin Layer chromatography (TLC), High Performance liquid chromatography (HPLC), Gas chromatography (GC).

Unit-III: Spectroscopic Techniques

Fundamental working principles and Forensic Significance of UV Visible Spectroscopy. Atomic Absorption Spectroscopy Atomic Emission, Infrared Spectroscopy, Raman spectroscopy

Unit –IV: Electrophoresis Techniques

Fundamental working principles and Forensic Significance of Affinity electrophoresis, Capillary electrophoresis, Immuno-electrophoresis, Gel Electrophoresis.

Unit-V: Forensic Photography

Basic principles and applications of photography in forensic science. 3D photography, Infrared and ultraviolet photography. Digital photography. Videography. Crime scene and laboratory photography.

Practical's Optional: (Internal Evaluation 25 Marks, apart from CIA)

1. To determine the concentration of a coloured compound by colorimetry analysis.
2. To carry out thin layer chromatography of ink samples.
3. To carry out separation of organic compounds by paper chromatography.
4. To identify drug samples using UV-Visible spectroscopy.
5. To take photographs of crime scene exhibits at different angles.

Internal Evaluation: 25 Marks CIA+ 25 Marks Practical= 50 Marks
External Evaluation: 50 Marks

RECOMMENDED READINGS:

D.A. Skoog, D.M. West and F.J. Holler, Fundamentals of Analytical Chemistry, 6 th Edition, Saunders College Publishing, Fort Worth (1992).

W. Kemp, Organic Spectroscopy, 3rd Edition, Macmillan, Hampshire (1991).

J.W. Robinson, Undergraduate Instrumental Analysis, 5th Edition, Marcel Dekker, Inc., New York (1995).

D.R. Redsicker, The Practical Methodology of Forensic Photography, 2nd Edition, CRC Press, Boca Raton (2000).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	Low	High	Low	Medium	Low	High	Medium
CO2	Medium	High	High	Medium	Low	Low	High	Medium
CO3	High	Medium	High	Low	Medium	Medium	Medium	Medium
CO4	Medium	High	Medium	Low	Low	Low	High	Medium
CO5	High	Low	High	Low	Medium	Low	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	Low	High	Low	Medium
CO2	High	Low	High	Low	Medium
CO3	Medium	High	Medium	Low	Low
CO4	Medium	Low	Low	High	Medium
CO5	Low	Medium	Low	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**		

CORE COURSE IV
QUESTIONED DOCUMENTS

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core IV		**Questioned Documents**	4	1	0	5

Course Objectives:

The main objectives of this course are

- *The main objective of the paper is to understand the importance of examining questioned documents in crime cases. The tools required for examination of questioned documents. The significance of comparing hand writing samples. The importance of detecting frauds and forgeries by analysing questioned documents.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand nature of various types of questioned documents	K1 K2
CO2	Know about important tools used in analysing the questioned documents.	K3
CO3	Familiarize with concept of documents and its comparison.	K4 K5
CO4	Understand the alteration and forgeries in document.	K2
CO5	Explore counterfeit currencies and its nuances.	K3 K4
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit I: Basics of Questioned Documents

Nature and Scope of Questioned Documents- Definition of questioned documents-Types of questioned documents. Preliminary examination of documents.

UNIT II: Instrumentations in Questioned Documents

Basic tools needed for forensic documents' examination– ultraviolet, visible, infrared and fluorescence spectroscopy, photomicrography, microphotography, visible spectral comparator, electrostatic detection apparatus - Determining the age and relative age of documents.

UNIT III: Document Comparison

Comparison of Documents- Comparison of handwriting. Development of individuality in handwriting. Natural variations and fundamental divergences in handwritings. Class and individual characteristics- Merits and demerits of exemplar and non-exemplar samples during comparison of handwriting. Standards for comparison of handwriting- Comparison of paper, ink, printed documents, typed documents, Xeroxed documents.

UNIT IV: Alteration and Forgeries

Forgeries- Alterations in documents, including erasures, additions, over-writings and obliterations. Indented and invisible writings. Charred documents.Handwriting- Methods- Applications of handwriting recognition.

UNIT V: Counterfeit Currencies

Examination of counterfeit: Indian currency notes, passports, visas and stamp papers. Disguised writing and anonymous letters.

RECOMMENDED READINGS:

O. Hilton, Scientific Examination of Questioned Documents, CRC Press, Boca Raton (1982).

A.A. Moenssens, J. Starrs, C.E. Henderson and F.E. Inbau, Scientific Evidence in Civil and Criminal Cases, 4th Edition, Foundation Press, New York(1995).

R.N. Morris, Forensic Handwriting Identification: Fundamental Concepts and Principles, Academic Press, London(2000).

E. David, The Scientific Examination of Documents – Methods and Techniques, 2nd Edition, Taylor & Francis, Hants(1997).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	High	High	Low	High	Medium	High
CO2	Low	Medium	High	Low	Medium	High	Medium	High
CO3	Medium	High	Medium	Medium	Low	High	Low	High
CO4	High	Medium	Low	Medium	Low	Medium	Low	Medium
CO5	High	Low	Low	High	High	Low	High	Low
Correlation Levels:			**Low**	**Medium**	**High**			

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	Medium	Low	High
CO2	High	Low	Low	Medium	High
CO3	Medium	High	High	Low	High
CO4	Low	Low	Low	Low	Medium
CO5	Low	Medium	Medium	High	Low
Correlation Levels:		**Low**	**Medium**	**High**	

ELECTIVE II GENERIC/ DISCIPLINE SPECIFIC
CRIMINAL LAWS

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Elective II		**Criminal Laws**	3	1	0	3

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- This course intended to make students get acquainted with fundamentals of major criminal laws such as Bharatiya Nyaya Sanhita (BNS), Bharatiya Nagarik Suraksha Sanhita (BNSS), Bharatiya Sakshya Adhiniyam (BSA).Through this course students will learn about legal provisions related criminal offences committed against human body and property. This course provides knowledge about courtroomprocedures along with Bharatiya Sakshya Adhiniyam.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understanding basics of nomenclatures of Indian criminal law.	K1 K2
CO2	Describing the legal provisions of Bharatiya Nyaya Sanhita related to human body and property.	K3
CO3	Narrate various procedural aspects and provisions of Bharatiya Nagarik Suraksha Sanhita in relation to criminal justice administration.	K1 K4
CO4	Develop knowledge about court procedures and their importance.	K6
CO5	Understanding the concepts of Bharatiya Sakshya Adhiniyamand their legal importance.	K2
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

Unit-I: Introduction

Definitions: Vices, Sin, Tort and Crime– History of criminal law– Constitution, BNS, BNSS and BSA-Nature and Scope.General Exceptions under BNS. Crimes against Women and Children.

Unit-II: Legal provisions in Bharatiya Nyaya Sanhita (BNS)

Crimes against property– Theft– Robbery– Dacoity. Crimes against persons: Culpable Homicide, Murder, Rape, Hurt, Crimes against public tranquillity: Riot, Unlawful assembly.

Unit-III: Bharatiya Nagarik Suraksha Sanhita (BNSS)

Organizational setup of courts in India. Complaint– inquiry– investigation– police report– public prosecutor– defence counsel- Arrest. Bail, Search, Seizure. Powers of the Police relating to Investigation. FIR and Charge Sheet.

Unit-IV: Court Procedures

Summons– Warrant– Information regarding cognizable and non-cognizable offence. Trials: Summary, Summon, and warrant trials.

Unit-V: Bharatiya Sakshya Adhiniyam

Evidence Act– History in India. Evidence– Meaning, principles, and concept of relevancy and Fact; Admissibility. Confessions and dying declaration.Presumption of fact and law, Burden of proof.

RECOMMENDED READINGS:

1. Guar K.D., (1995) Criminal Law, Oxford University Press
2. Kelkar, R.V., (1996) Outlines of Criminal Procedure
3. Pillai, A.P. S., (1996) Criminal Law, N.M. Tripathi.
4. Ratanlal and Dhirajlal (1995) Code of Criminal Procedure
5. SarathyVeppa P. (1994) Elements of Law of Evidence, Eastern book Co., Lucknow.
6. Singh, A., (1995) Law of Evidence, Allahabad Law agency.
7. Bare Act: Bharatiya Nyaya Sanhita (BNS)
8. Bare Act: Bharatiya Nagarik Suraksha Sanhita (BNSS)
9. Bare Act: Bharatiya Sakshya Adhiniyam (BSA)

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	Low	High	High	High	Low	Low
CO2	High	Low	Medium	High	High	Low	Medium	High
CO3	Medium	Medium	Low	High	High	Medium	Low	High
CO4	Low	Medium	Low	Medium	Medium	Medium	Low	Medium
CO5	Low	High	High	Low	Low	High	High	Low
Correlation Levels: Low Medium High								

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	Medium	Medium	High
CO2	Medium	Low	Low	Medium	Low
CO3	High	High	High	Low	Medium
CO4	Medium	Low	Low	Low	High
CO5	Low	Medium	Medium	High	High
Correlation Levels: Low Medium High					

SKILL ENHANCEMENT COURSE- 2
FORMS OF CYBERCRIMES

CourseCode	Sub Code	TITLEOFTHECOURSE	L	T	P	C
SEC 2		Forms of Cybercrimes	2	0	0	2

L:Lecture T:Tutorial P:Practical C:Credits

Course Objectives

The main objectives of this course are

- To introduce the students to the cybercrimes, impacts and cyber law. The students will be informed of cyberspace. The counter and precautionary measures in matters relating to cybercrimes. The investigation cybercrime will be introduced to students.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand forms of cybercrimes.	K1 K2
CO2	Discuss data and identify data sources.	K3
CO3	Narrate and describe forms of digital evidences.	K1 K4
CO4	Compare and contrast the differences between digital evidence and traditional evidence.	K6
CO5	Understanding the concepts of cyber law and IPR. .	K2
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

Unit I: Introduction

Origin – History and Nature of Cybercrime: Definition - evolution, cyber-crimes, cyber space.Forms of Malicious Code - Computer Viruses, Computer Worms, Computer Trojans, Web Hacking, Denial of Service Attacks, Email Hacking using Packet Sniffers, Email Hacking & Phishing and cyber-crime- Best Practices for Cyber Crime Investigation – Scope of computer in criminal justice system.

Unit II: Computer Forensic

Computer Forensic- Nature of Digital Evidences, Retrieval and Analysis of Digital Evidence, Computer Security and its relationship to Computer Forensics, Extraction Tools (Autopsy, Encase, Cellebrite UFED etc.), Emergence of Computer Crime: Classification of Computer Crimes, Computer Virus and Types, Characteristics of Computer Crime and Criminals, Prevention from Cyber Crime.

Unit III: Cyber Crime Investigation

Recovery of Digital Evidence, setting up a Cyber Crime, Investigation Cell - Manipulating Cookies - Email Hacking, Computer Forensic - Role of investigator, Role of Police, Role of Victim – Secondary victimization – privacy of information.Initialising a Search and Seizure Operation, Tracking & Tracing Emails- Foot printing, Port Scanning.

Unit IV: Cyber Law and Counter Measures

Case Studies in Cyber Crimes in India, USA and UK– preventive measures - computer as tool for crime- Cyber terrorism- Prevention and detection of cybercrime - Fraud and identity theft.Cyber

Policing- Current statutes in India: Penalties &Administrative Monetary Penalties (**amp**); Offences under the Information Technology Act, 2006.

Unit V: Intellectual Property Rights

Intellectual Property Issues and Cyberspace– The Indian Perspective: Overview of Intellectual Property related Legislation in India, Copyright law; Cyberspace Trademark law.

Recommended Readings

1. Hill, J., & Marion, N. (2016). Introduction to cybercrime. Westport, CT: Praeger
2. Hynson, C. (2012). Cybercrime. Mankato, MI: Smart Apple Media.
3. Albert J. Marcellaa and Robert S. Greenfiled (Ed) (2002) Cyber Forensics, A Field Manual for collecting, examining and preserving evidence of computer crimes, Auerbach publications. Derek Atkins et. al., (1997). Internet Security: Professional Reference, Techmedia, Daryaganj, New Delhi.
4. Seymour Goodman and Abraham Soafer (ed.) (2002) The Transnational dimensions of cybercrime, Hoover Institution Press Washington.
5. IT Act 2000 amended in 2006.

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Low	Low	Medium	High	Low	Low	Medium	Low
CO2	Low	Medium	High	High	Medium	High	Medium	Medium
CO3	Medium	High	High	High	High	Medium	Medium	Medium
CO4	High	High	Medium	High	High	Medium	Medium	Low
CO5	Medium	Medium	Medium	High	Medium	Medium	Medium	Low
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	Medium	Low	Low	Medium	High
CO2	Medium	Low	Medium	High	High
CO3	High	Low	Medium	High	High
CO4	High	Low	Medium	High	Medium
CO5	High	Low	Medium	Medium	High
Correlation Levels:	**Low**	**Medium**	**High**		

SKILL ENHANCEMENT COURSE- 3
FORENSIC SCIENCE- LAB

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
SEC 3		**Forensic Science- Lab**	0	0	2	2

Course Objectives:
The main objectives of this course are

- *The main objective of the paper is to understand the ways of examining questioned documents in crime cases. The tools required for examination of questioned documents. The significance of comparing hand writing samples. The importance of detecting frauds and forgeries by analysing questioned documents.*

Course Outcomes (COs):
At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand analyse various types of questioned documents	K1 K2
CO2	Application of tools in analysing the questioned documents.	K3
CO3	Familiarize with concept of documents and its comparison.	K4 K5
CO4	Understand the alteration and forgeries in document.	K2
CO5	Explore counterfeit currencies and its nuances.	K3 K5
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Practical's:
1. To cite examples of crime cases in which apprehensions arose because of Daubert standards.
2. Alteration in questioned documents
3. Analysis of Hair and Fibre.
4. To study procedures of Packing & Forwarding of various Evidences.
5. Comparison of Signatures, different type of forged and disguised signature
6. Check and compare handwritings
7. Check the seal and ink used in questioned documents
8. To Examine Security Features of Indian Currency Notes.
9. Analysis/ comparison of glass fractures
10. Comparison of Soil colour test.

RECOMMENDED READINGS:
1. O. Hilton, Scientific Examination of Questioned Documents, CRC Press, Boca Raton (1982).
2. A.A. Moenssens, J. Starrs, C.E. Henderson and F.E. Inbau, Scientific Evidence in Civil and Criminal Cases, 4th Edition, Foundation Press, New York(1995).
3. R.N. Morris, Forensic Handwriting Identification: Fundamental Concepts and Principles, Academic Press, London(2000).
4. E. David, The Scientific Examination of Documents – Methods and Techniques, 2nd Edition, Taylor & Francis, Hants (1997).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	High	High	Low	High	Medium	High
CO2	Low	Medium	High	Low	Medium	High	Medium	High
CO3	Medium	High	Medium	Medium	Low	High	Low	High
CO4	High	Medium	Low	Medium	Low	Medium	Low	Medium
CO5	High	Low	Low	High	High	Low	High	Low
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	Medium	Low	High
CO2	High	Low	Low	Medium	High
CO3	Medium	High	High	Low	High
CO4	Low	Low	Low	Low	Medium
CO5	Low	Medium	Medium	High	Low
Correlation Levels:	**Low**	**Medium**	**High**		

SEMESTER III

CORE COURSE V
BASICS OF DIGITAL FORENSICS

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core Course V		**Basics of Digital Forensics**	3	2	0	5

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *The students will learn basics of digital forensics.The cases which fall under the purview of digital crimes.The types of digital crimes.Theelements involved in investigation of digital crimes.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand the hardware and software's of computer	K2
CO2	Appreciate the forms of digital crimes and its nature.	K3
CO3	Familiarize with concept and causes of digital crimes.	K4 K5
CO4	Investigate the digital crimes and its evidences.	K4 K5
CO5	Explore and conduct the digital forensics.	K1
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit 1: Fundamentals and Concepts

Fundamentals of computers Hardware and accessories – development of hard disk, physical construction, CHS and LBA addressing, encoding methods and formats - Memory and processor. Methods of storing data. Operating system. Software. Introduction to network, LAN, CAN, WAN, MAN WLAN.

UNIT II: Digital Crimes

Digital Crimes – Definition; Forms and types of digital crimes. Distinction between computer crimes and conventional crimes. Reasons for commission of computer crimes. Breaching security and operation of digital systems.

UNIT III: Modalities of Digital Crimes

Computer virus, and computer worm– Trojan horse, trap door, super zapping, logic bombs. Types of computer crimes– computer stalking, pornography, hacking, crimes related to intellectual property rights, computer terrorism, hate speech, private and national security in cyber space - An overview of hacking, spamming, phishing and stalking.

UNIT IV: Computer Forensics Investigations

Seizure of suspected computer. Preparation required prior to seizure- Protocol to be taken at the scene. Extraction of information from the hard disk- Treatment of exhibits. Creating bitstream of the original media. Collection and seizure of magnetic media.

UNIT V: Digital Forensics

Legal and privacy issues. Examining forensically sterile media. Restoration of deleted files. Password cracking and E-mail tracking. Encryption and decryption methods. Tracking users.

Recommended Readings:

R.K. Tiwari, P.K. Sastry and K.V. Ravikumar, *Computer Crimes and Computer Forensics*, Select Publishers, New Delhi (2003).

C.B. Leshin, *Internet Investigations in Criminal Justice*, Prentice Hall, New Jersey(1997).

R. Saferstein, *Criminalistics*, 8th Edition, Prentice Hall, New Jersey(2004).

E. Casey, *Digital Evidence and Computer Crime*, Academic Press, London (2000).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Medium	Medium	Medium	Medium	Medium	Low	High	Medium
CO2	Medium	High	High	Low	Low	Low	High	Low
CO3	High	High	High	High	Medium	Medium	Medium	High
CO4	High	High	Medium	High	Low	Low	High	High
CO5	High	Low	High	Low	Medium	Low	High	Low

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	Low	High	Low	Medium
CO2	High	Low`	High	Medium	Medium
CO3	High	High	Medium	Low	Low
CO4	High	Low	Low	High	Medium
CO5	Low	Medium	Low	High	Medium
Correlation Levels:		**Low**	**Medium**	**High**	

CORE COURSE VI
DACTYLOGRAPHY

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core VI		**Dactylography**	3	2	0	5

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *The objective of the course is to impart knowledge of dactylography (fingerprints) as important physical evidence at the scene of crime. The students would be able to study the manner in which it is developed, identified, classified, collected, packed and forwarded to the Fingerprint Bureau.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	To explain the history and development of fingerprints with its importance as evidence.	K1
CO2	To explain the formation of friction ridges, basic fingerprint pattern types and its interpretation. Different individual characteristics of ridges.	K3
CO3	To explain the ridge counting and tracing. Method for making an inked specimen of fingerprint.	K4 K5
CO4	To describe the classification of fingerprints -Henry system, single digit classification and function of Fingerprint Bureau.	K2
CO5	To explain the latent fingerprint and chance fingerprints in criminal investigation, and describe the various methods of development of fingerprints.	K3
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit-I: Introduction to Fingerprints

History of Fingerprinting History and Development of Fingerprints, Important Figures in the Field of Fingerprint, Principles of Fingerprints and its Pattern Biological Basis of Fingerprints, Ridge Formation, Fingerprint Patterns, Pattern Areas, General and Individual Characteristics of Fingerprints.

Unit-II: Recording and Examination of Fingerprints

Ridge Counting and Tracing, Filling and Searching. Method for Making an Inked Specimen of Fingerprint. Taking of Fingerprint from Living and Dead Person. Comparison Protocols: Class and Individual Characteristics (Galton's Details), Different Ridge Characteristics

Unit-III: Classification of Fingerprints

Classification of Fingerprints for Comparison Purposes: Pattern Area, Core, Delta, Type Lines, Poroscopy, Edgeoscopy, Ridge Characteristics, Fingerprint Pattern Types: Essentials and its types of Loops, Arch, Whorl, Composites, Accidental patterns, etc. Classification of Fingerprints: Henry System of Classification, Single Digit Classification

Unit-IV: Developing Fingerprints

Various Methods of Development of Fingerprints: Physical (Black and Grey, Fluorescent and Magnetic Powder Method) and Chemical Methods, Fuming Methods, Laser Method, Lifting of Latent Fingerprints. Photography of Latent Traces. Fingerprint as Forensic Evidence, Presentation of Fingerprint Evidence and Testimony in Court.

Unit-V: Modern Finger Print Lab & Field Equipment and Chemicals

Alternate Light Source (ALS) i.e. Poly light, Cyanoacrylate Fumigation Chamber, Cyano wand Iodine Fuming apparatus, Electrostatic Dust Lifting Kit (DLK), Electric FP Comparator, Reflective Ultraviolet Imaging System (RUVIS), Fluorescent FP powders for multi-coloured surfaces, SPR (Suspended Particle Reagent, Reagent for wet surfaces.

RECOMMENDED READINGS:

Bridges, B.C., Vollmar, A. and Munir, M. Criminal Investigation, Practical Fingerprinting, Thumb Impressions, Handwriting, Expert Testimony Opinion Evidence. University Book Agency: Allahabad;(2000).

James, S.H. and Nordby, J.J. Forensic Science-An Introduction to Scientific and Investigation Techniques 4 th ed. CRC Press: London;(2015).

Nanda, B.B. and Tewari, R.K. Forensic Science in India-A Vision for the Twenty-First Century. Select Publishers: New Delhi;(2001).

Saferstein, R. Criminalistics, An Introduction to Forensic Science 6thed. PrenticeHall: New Jersey;(1998).

Sharma, B.R. Forensic Science in Criminal Investigation and Trials 3rd ed. Universal Law Publishing: New Delhi;(2001).

Chatterjee, S.K. Speculation in Fingerprint Identification. Calcutta; (1981).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	Low	Medium	Low	High	Low	High	Low
CO2	High	High	Medium	Medium	High	Low	High	Low
CO3	High	Medium	Low	Low	High	Medium	High	Medium
CO4	High	High	Low	Low	High	Low	Low	Medium
CO5	High	Low	Low	Low	High	Low	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	Low	Low	Low	Low	Medium
CO2	High	Low	High	Low	Medium
CO3	Medium	High	Medium	Low	Low
CO4	Medium	Low	Low	High	Medium
CO5	Low	Medium	Low	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**		

ELECTIVE III GENERIC/ DISCIPLINE SPECIFIC
JUVENILE JUSTICE AND CHILD PROTECTION

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Elective III		**Juvenile Justice and Child Protection**	3	1	0	3

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *On completion of this course, the students would be able to develop conceptual understanding of juvenile justice. The basic concepts of child protection and its modalities including juvenile justice administration.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand the basic concepts of juvenile behaviours and deviance.	K1 K2
CO2	Define a child and delinquent and delinquent behaviours.	K1 K2 K4
CO3	Analyze the laws relating to delinquency and other child-related problems.	K1 K2 K3 K4
CO4	Understand legal instruments such as the United Nations Convention on Child Rights, Fundamental Rights in the Constitution of India, other national and state-level commissions	K1 K2
CO5	Analyze and conceptualize how a child shall be protected using the legal parameters.	K4 K5 K6
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

Unit I: Introduction

Definition: Child– Delinquents; History of the juvenile justice system in India– Types of problem children: Ungovernable, neglected, destitute and deviant– *parens patriae – in loco parentis.*

Unit II: Rights of the Child

Basic rights– Child rights as human rights– United Nations Convention on the Rights of the Child (UNCRC)– Legal protection for children– Fundamental rights as defined by the Constitution of India– National Commission for Protection of Child Rights – State Commission for the Protection of Child Rights

Unit III: Risk Factors of Juvenile Delinquency

Gender – Socio-economic status – Family background – Neighbourhood – Childhood abuse and neglect – Peer group – School environment – Academic performance – Offence history – Addiction: Substance, alcohol, tobacco and social media.

Unit IV: Child Protection- Legal Framework

Principles of Best Interest – UN Convention on the Rights of the Child (UNCRC); Juvenile Justice (Care and Protection of Children) Act, 2015; Riyadh Guidelines; Tokyo Guidelines; Protection of Children from Sexual Offences Act, 2012.

Unit V: Juvenile Justice System in India and Child Protection

Institutions for Children in Conflict with Law: Juvenile Justice Board (JJB) – Observation homes – Special home – Borstal school – Place of safety – Special Juvenile Police Unit; Institutions for Children in Need of Care and Protection: Child Welfare Committee (CWC) – Open shelter – Foster care – Children's/Shelter homes

RECOMMENDED READINGS:

Cox, S. M. (2017). *Juvenile justice: A guide to theory, policy and practice*. Los Angeles: SAGE.

Freeman, M. D. (2014). *The future of children's rights*. Leiden, The Netherlands: Brill Nijhoff.

Juvenile Justice (Care and Protection of Children) Act, 2015 (Ind.).

Kumari, V. (2012). *The juvenile justice system in India*. New Delhi: Oxford University Press.

Kumari, V. (2017). *The Juvenile Justice (Care and Protection of Children) Act 2015: Critical analyses*. Gurgaon, Haryana, India: Universal Law Publishing, an imprint of LexisNexis.

Merlo, A. V., Benekos, P. J., & Champion, D. J. (2016). *The juvenile justice system: Delinquency, processing and the law*. Boston, MA: Pearson.

Thompson, K., & Morris, R. (2016). *Juvenile delinquency and disability*. New York: Springer Nature.

Whitehead, J. T., & Lab, S. P. (2013). *Juvenile justice: An introduction*. Waltham, MA: Lexis Nexis Matthew Bender.

UN Convention on the Rights of the Child (UNCRC)

Juvenile Justice (Care and Protection of Children) Act, 2015

Riyadh Guidelines

Tokyo Guidelines

Protection of Children from Sexual Offences Act, 2012.

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Low	Medium	Medium	High	Low	High	Medium	Medium
CO2	Medium	Medium	Medium	High	Medium	High	High	High
CO3	High	Low	Medium	Medium	Medium	High	High	High
CO4	Medium	Low	Medium	High	High	High	High	High
CO5	Medium	Low	Medium	Medium	Medium	High	Medium	High
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	Low	Medium	Low	Medium	Medium
CO2	Medium	Medium	Medium	High	Low
CO3	Medium	Medium	Low	High	Medium
CO4	Low	Medium	Medium	High	Low
CO5	Low	Medium	Medium	High	High
Correlation Levels:	**Low**	**Medium**	**High**		

SKILL ENHANCEMENT COURSE- 4 (ENTREPRENEURIAL SKILL)
CRIMINALISTICS SERVICES AND ENTREPRENEURSHIP

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
SEC 4		**Criminalistics Services and Entrepreneurship**	1	0	0	1

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *To impart knowledge of criminalistics services.*
- *The students able appreciate and understand the entrepreneurial skills required for instating a criminalistics service bureau/ agency.*

Course Outcomes (COs):

At the end of this course of study, the student will be able

CO No.	Course Outcomes	Cognitive Levels
CO1	To explain the history and development of criminalistics.	K2
CO2	To explain the ridge counting and tracing.	K3
CO3	Method of making an inked specimen of fingerprint.	K4 K5
CO4	To describe the classification of fingerprints -Henry system, single digit classification and function of Fingerprint Bureau.	K1
CO5	To explain the formation of criminalistics service bureau/ agency.	K2 K3
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit I: Forensic Criminologist

CriminalistsVS criminalistics; Principles and Practice; Field of forensic investigation; Individualization and pattern matching; Associate a crime scene mark or object with its source.

Unit II: Forensic Comparison

Criminalistics comparison of fingerprints, handwriting, bitemarks, voiceprints, toolmarks, firearms, tire prints, shoe prints, fluids.

Unit III: Forensic Investigation

Criminalistics investigation- link a latent fingerprint, a writing, a bitemark, a bullet, or similar objects to the one and only finger, writer, teeth, gun, or other specific object that made the markings and viscera samples under lab tests.

Unit IV: Recruitment and Training of Staff

Human Resources: Recruitment process (Background and police verification); Training: Code of conduct and SOP training – Communication and attitude management – Physical training – Maintenance of records – Biometric and other equipment training; Emergency response training.

Unit V: Entrepreneurial Skills

Permission and Registration- Trust/ Service Agency/ Services;Registration Requirements: Company registration – Nature of your company as PLC/LLP, Documents required– Permit and insurance– GST – ESI and PF registration – Market analysis and capital requirement; Client management.

RECOMMENDED READINGS:

Beckman, M. 2003. The scientist as manager. The Chronicle of HigherEducation, January 28. http://chronicle.com/jobs/news/2003/01/2003012801c.htm

Benson, W., & J. Stacy. 1970. Systems analysis of criminalisticsoperations. Washington, DC: Law Enforcement Assistance Ad-ministration.

Brown, J., & P. Duguid. 2002. The social life of information. Boston:Harvard Business School Press.

Camp, R. 1995. Business process benchmarking. Milwaukee, WI: IrwinProfessional Publishing/ASQC Quality Press.

Campbell, A., J. Whitehead, & S. Finkelstein. 2009. Why goodleaders make bad decisions. Harvard Bus. Rev. (February): 60–66.

Childs, R., & T. Witt. 2009. Survey of forensic science serviceproviders. Forensic Sci. Policy Manage. 1(1): in press.

De Feo, J., & W. Barnard. 2005. JURAN Institute's six sigma break-through and beyond—Quality performance breakthrough methods.New York: McGraw-Hill Professional.

Deming, W. E. 1986. Out of the crisis. Boston: MIT Center for Advanced Engineering Study.

Durose, M. 2008. Census of publicly funded forensic crime lab-oratories, 2005. Washington, DC: U.S. Dept. Justice, Bureau ofJustice Statistics.

Forde, A. 2005. Training scientists as managers. Science Career Magazine. July 15. http://sciencecareers.sciencemag.org/ ca-reer magazine

Geles, C., G. Lindecker, M. Month, & C. Roche. 2000. Managingscience. New York: John Wiley & Sons.

Law Enforcement Assistance Administration. 1968. Crimelaboratories—Three study reports. Washington, DC: Office ofLaw Enforcement Assistance.

Mintzberg, H. 2005. Managers not MBAs. San Francisco: Berrett-Koehler.

National Institute of Justice. 2004. Status and needs of forensic scienceservice providers: A report to Congress. Rockville, MD: NCJRS.

National Institute of Standards and Technology (NIST). 1999.Forensic sciences: Review of status and needs. Rockville, MD:NIST.

Picker, S., C. Vehring, L. Hahn, J. Lecker, & M. Vala. 2005. Why arescientists not managers? J. Bus. Chem. 2(1): 1–3.QUADRUPOL. 2003. European Network of Forensic Science Insti-tutes.

Rosenthal, P., & D.A. Travnicek. 1974. Analysis of criminalisticslaboratory effectiveness in criminal justice systems. Buffalo,NY: CALSPAN.

Ryle, G. 1949. The concept of mind. London: Hutchinson.

Shewhart, W. 1939. Statistical method from the viewpoint of qualitycontrol. New York: Dover.

Speaker, P. 2009. Key performance indicators and managerialanalysis for forensic laboratories. Forensic Sci. Policy Manage. 1(1):32–42.

Max M. Houck, Richard A. Riley, Paul J. Speaker, and Tom S. Witt. (2009). *FORESIGHT: A business approach to improving forensic science services*. Available from: https://www.researchgate.net/publication/233096989_FORESIGHT_A_business_approach_to_improving_forensic_science_services.

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Low	Low	Low	High	Medium	High	High	Medium
CO2	Low	Low	Low	High	Low	High	High	Medium
CO3	Low	Low	Low	High	Medium	High	High	Medium
CO4	Low	Low	Medium	High	Low	High	High	Medium
CO5	Low	Low	High	High	Medium	High	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	Low	Low	High	High	Low
CO2	Low	Low	High	High	Low
CO3	Medium	High	Medium	High	Low
CO4	Medium	Low	Low	High	Medium
CO5	Low	Medium	Low	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**		

SKILL ENHANCEMENT COURSE- 5
FINGERPRINT EXAMINATION- LAB

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
SEC 5		**Fingerprint Examination- Lab**	0	0	2	2

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *To impart knowledge of fingerprints as important physical evidence at the scene of crime. The students would be able to study the manner in which it is developed, identified, classified, collected, packed and forwarded to the Fingerprint Bureau.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	To explain the finger print characteristics.	K1
CO2	Differentiate individual characteristics of ridges.	K2
CO3	To develop fingerprint using ninhydrin method.	K2
CO4	Todescribe the classification of fingerprints-Henry system, single digit classification and function of Fingerprint Bureau.	K3
CO5	Describe the various methods of development of fingerprints and compare it using software's.	K4 K5
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Practical's:

1. To Record Plain Fingerprints and Identify Ridge Characteristics.
2. To Calculate Henry Classification for Rolled Fingerprints.
3. To Develop Fingerprints from various objects using powder Method.
4. To Developing Fingerprint using Ninhydrin Method.
5. To Develop Fingerprint using Iodine Fuming Apparatus
6. Use software to check the finger prints.
7. Compare the fingerprints using samples.
8. Present the comparison as evidentiary document to the court.

RECOMMENDED READINGS:

Bridges, B.C., Vollmar, A. and Munir, M. Criminal Investigation, Practical Fingerprinting, Thumb Impressions, Handwriting, Expert Testimony Opinion Evidence. University Book Agency: Allahabad;(2000).

James, S.H. and Nordby, J.J. Forensic Science (2015). An Introduction to Scientific and Investigation Techniques 4 th ed. CRC Press: London.

Nanda, B.B. and Tewari, R.K. Forensic Science in India-A Vision for the Twenty-First Century. Select Publishers: New Delhi;(2001).
Saferstein, R. Criminalistics, An Introduction to Forensic Science 6thed. PrenticeHall: New Jersey;(1998).
Sharma, B.R. Forensic Science in Criminal Investigation and Trials 3rd ed. Universal Law Publishing: New Delhi;(2001).
Chatterjee, S.K. Speculation in Fingerprint Identification. Calcutta; (1981).

Details of the evaluation procedure

- At the **first level,** for continuous assessment, the course teacher will evaluate the students for 25 marks on the following criteria
  - Regularity in attending the practical's (10 marks)
  - Regularity in submission of observations and record draft (5 marks)
  - Quality of the record (10 marks).

- At the **second level,** during the end semester examination, the evaluation will be done by a panel of internal and external examiners for 75 marks, other semester students will be the audience. The students will be evaluated on the following criteria
  - Content of presentation (25 marks)
  - Presentation skills (25 marks)
  - Ability to defend the questions (25 marks).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	Low	Medium	Low	High	Low	High	Low
CO2	High	High	Medium	Medium	High	Low	High	Low
CO3	High	Medium	Low	Low	High	Medium	High	Medium
CO4	High	High	Low	Low	High	Low	Low	Medium
CO5	High	Low	Low	Low	High	Low	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	Low	Low	Low	Low	Medium
CO2	High	Low	High	Low	Medium
CO3	Medium	High	Medium	Low	Low
CO4	Medium	Low	Low	High	Medium
CO5	Low	Medium	Low	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**		

SEMESTER IV

CORE COURSE VII
FORENSIC PHYSICS

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core VII		**Forensic Physics and Ballistics**	3	2	0	5

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *On completion of this course, the students would be able to develop conceptual understanding of Forensic Physics and handling of Physical Evidences. The basic concepts of handling and examination of various physical evidences are quite important for criminal investigation. The detailed knowledge about the Mobile Forensic and Computer Forensic will be beneficial for understanding concepts of cybercrime and preventive measures.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand the basic concepts of Forensic Physics.	K1 K2
CO2	Know the handling and examination of Glass, Paint, Cement evidences.	K1 K2 K4
CO3	Know the examination and handling procedure of Fiber and Soil evidences.	K1 K2 K3 K4
CO4	Understandand examine crucial information related Ballistics and tool marks	K1 K2
CO5	Analyze and conceptualizethe understanding of Computer Forensics.	K4 K5 K6
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

Unit-I: Forensic Physics

Introduction, definition and scope. Density, refractive index,birefringence; other optical properties of crystalline material.Brief idea onelectromagnetic spectrum.General idea of instruments used in forensic physics likemicroscopy, spectroscopy, densitometer etc.

Unit-II: Forensic Examination of Glass & Cement

Glass: Definition, Composition, Types, Fracture Pattern, Examination; Forensic Significance Building Material: Cement: Types and Composition, Determination of Adulterants, Analysis of Concrete.

Unit-III:Forensic Analysis of Fiber& Soil Analysis

Fiber- Types, Constituents &their forensic importance Soil: Definition, Types, Examination and Forensic Significance. Cloth evidence collection, importance, analysis of adhering material.Matching of pieces.

Unit-IV: Forensic Ballistics

Basic Physics of Ballistics- Internal Ballistics, External Basics, terminal Ballistics; Firearms: Definition, Classification of Firearms, Ammunition: Definition, Types, Components of Cartridge: Cartridge case, Primer,Propellant, Wads, Projectile.

Unit-V:Tools Marks Examination

Tyre Marks and its importance, Tool mark evidence. Classification of tool marks. Forensic importance of tool marks.

RECOMMENDED READINGS:

Saferstein, R. Forensic Science Handbook 3rd ed.CRC, Press:Boca Raton; (2020).
Caddy, B. Forensic Examination of Glass and Paint:Analysis and Interpretation. CRC Press: (2001)
Murray, R.C. and Tedrow, J.C.F. Forensic Geology. Prentice Hall: New Jersey; (1998).
Dennis S. Physics in the Prevention and Detection of Crime. Contemporary Phys: (1976).
Working Procedure Manual: Physics: BPR&D Publication.
Cassidy, J.M. Footwear Identification: Canadian Govt. Publishing Centre: Canada; (1980)
Kirk, D.V. Vehicular Accident Investigation and Reconstruction: CRC Press: (2000).
Noon, R.K. Forensic Engineering Investigation. CRC Press: (2000).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	High	High	Low	High	Medium	High
CO2	Low	Medium	High	Low	Medium	High	Medium	High
CO3	Medium	High	Medium	Medium	Low	High	Low	High
CO4	High	Medium	Low	Medium	Low	Medium	Low	Medium
CO5	High	Low	Low	High	High	Low	High	Low
Correlation Levels: Low Medium High								

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	Medium	Low	High
CO2	High	Low	Low	Medium	High
CO3	Medium	High	High	Low	High
CO4	Low	Low	Low	Low	Medium
CO5	Low	Medium	Medium	High	Low
Correlation Levels: Low Medium High					

CORE COURSE VIII
RESEARCH METHODS AND CASE STUDIES

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core VIII		**Research Methods and Case Studies**	3	2	0	5

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *On completion of this course, the students will be able understand the research methods including universe of the study, sampling, data collection, hypotheses, data interpretation, discussion, and statistical application. The students will be trained on report writing (dissertation) and case studies.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Describe the characteristics, types and significance of research.	K1 K2
CO2	Examine the research problem, research process, review of literature, research questions, etc.	K1 K2 K4
CO3	Demonstrate basic concepts of statistics such as mean, median, mode and probability. Understand descriptive and inferential statistics, independent and dependent variables.	K1 K2 K3 K4
CO4	Demonstrate application of SPSS on a data along with other research tools	K1 K2
CO5	Ability to work with online databases and surveys.	K4 K5 K6
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

Unit I: Introduction to Research
Definitions– Characteristics of research– Types of research: Qualitative, quantitative and mixed– Significance of research– Criteria of good research– Research ethics

Unit II: Research Process
Research process– Research problem– Objectives of the study– Scope of the study – Review of literature – Research questions – Hypotheses – References – Citation

Unit III: Research Design
Research design– Need for research design– Types of research design– Population– Sample and sampling procedures– Types of sampling– Primary data– Secondary data– Tools of data collection: Questionnaire, interview schedule, focus group discussion, in-depth interview, observation method

Unit IV: Basic Concepts of Statistics

Types of statistics: Descriptive and inferential– Mean, median and mode– Probability–Variables: Independent and dependent. Online databases– Online surveys: Google forms, Survey Monkey– Reference: APA Format– Introduction to Statistical Package for the Social Sciences.

Unit V: Case Studies

Descriptive Case Studies; Exploratory (or pilot) Case Studies; Cumulative Case Studies; Critical Intense Case Studies. Composing a case study analysis; Expert Panel; Evaluation of comparable case studies; Cross Examination.

RECOMMENDED READINGS:

Agarwal, B. (2013). Basic statistics (6th ed.). New Delhi: New Age International (P) Limited.

Bradley, P. (2017). Expert internet searching. London: FACET Publishing.

Gupta, S. (2013). Fundamentals of Statistics. Mumbai: Himalaya Publishing.

Kothari, C., & Garg, G. (2016). Research methodology. New Delhi: New Age International (P) LimitedPublishers.

Matthews, B., & Ross, L. (2010). Research methods: A practical guide for the social sciences. New York: Pearson Longman.

Muller, J. (2003). *A librarian's guide to the Internet*. Oxford: Chandos.

Richardson, T. (2015). *Microsoft Office 2013/365 and beyond*. Dulles, VA: Mercury Learning and Information.

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	High	High	Medium	High	High	Medium
CO2	Medium	High	High	High	Low	High	High	Medium
CO3	High	Medium	High	High	Medium	High	Medium	Medium
CO4	Medium	High	Medium	High	Low	High	High	Medium
CO5	High	Low	High	High	Medium	High	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	High	High	Medium
CO2	Low	High	High	High	Medium
CO3	Medium	High	Medium	High	Low
CO4	Medium	Low	Low	High	Medium
CO5	Low	Medium	Low	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**		

ELECTIVE IV GENERIC/ DISCIPLINE SPECIFIC
FUNDAMENTALS OF VICTIMOLOGY

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Elective IV		**Fundamentals of Victimology**	3	0	0	3

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- The objective is to impart to the students' knowledge regarding basic concepts about Victimology and role of police and court & victims in criminal justice system. They would also know the importance of various laws related to deliver justice to victim at national and global perspective.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	To Understand Development of Victimology and understand the Role of Police and Judiciary in providing remedies for victims of Crime.	K1
CO2	To Development of Victimology and understand the concept of national & international concern of Victim of Crime	K3
CO3	To Familiarize with international instruments for victims of crime .	K4
CO4	To evaluate standards of UN conventions related to treatment of	K5
CO5	To Understand the Human rights aspects of victims of crime and prisoners	K1
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit-I:Victim and Criminal Justice System

Victims' involvement with the police and the criminal justice system, Restitution and compensation for crime victims, Victims' rights.

Unit-II:United Nations and Victims

The role of the United Nations in establishing victim rights. The emotional and practical needs of crime victims.

Unit-III:International Instruments

Magna Carta for victims Declaration of Basic Principles of Justice for Victims of Crime and Abuse of Power, 1985.

Unit-IV: United Nations and Offenders

UN Congresses UN Congresses on Treatment of offenders – Geneva Convention on Treatment of offenders

Unit-V:Human Right violations

Human right violations with regard to prisoners Human Rights and Fundamental Freedoms in relation to accused. Prisoner's rights -Landmark Judgements

RECOMMENDED READINGS:

Chockalingam, K. 1985, Readings in Victimology, Raviraj Publications, Chennai.

Fattah, E.A. 1991. Understanding Criminal Victimization, Scarborough, Ont.: Prentice Hall Canada.

Gottfredson, M. R. 1984. Victims Of Crime: The Dimensions of Risk, Home Office Research and Planning Unit, Report No. 81, London: Hmso.

Gupta M.C., Chockalingam K., and Jayatilak Guha Roy 2001, Child Victims of Crime-Problems and Perspectives. Gyan Publishing House, New Delhi.

Karmen, A. 1990. Crime Victims: An Introduction to Victimology, (2nd Edition). Montery, Ca: Brooks/Cole.

Lurigio, A.J., Skogan, W.G. & Davis, R.C. (1990). Victims of crime: Problems, policies, and programs. London: Sage.

Mawby, R.I. And Gill, M.L. 1987. Crime Victims: Needs, Services and The Voluntary Sector, London: Tavistock.

Miers, D. 1978. Response to Victimization, Oxford: Milton Trading Estate.

Rajan, V.N., 1981, Victimology in India, Allied Publishers Pvt Ltd., New Delhi

Shapland, J., Willmore, J. And Duff, P. 1985. Victims in the Criminal Justice System, London: Gower.

11.Snyman, R. (1997). Victim's Rights.In F. Nel& J. Bezuidenhout (Eds.), Policing and Human Rights (pp.155-168).Kenwyn: Juta.

12.United Nations 1985. Declaration of Basic Principles of Justice for Victims Of Crime And Abuse Of Power, New York: United Nations.

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Medium	Low	Medium	Medium	Low	Low	Low	High
CO2	High	Low	High	Medium	High	Low	Low	High
CO3	High	Medium	High	Medium	Medium	Medium	Low	High
CO4	Medium	Medium	Medium	High	High	Medium	Low	High
CO5	Medium	Low	Medium	High	Medium	Medium	Low	High
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	Medium	Low	Low	Medium	Medium
CO2	Medium	Medium	Medium	High	Low
CO3	Medium	Medium	Medium	High	High
CO4	High	High	Medium	High	Low
CO5	Medium	High	Medium	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**		

ENHANCEMENT COURSE- 6
FORENSIC SEROLOGY

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
SEC 6		**Forensic Serology**	2	0	0	2

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- The course aims to provide students with brief overview of the various sections of importance of biological fluids including blood as evidence for criminal investigation. It details about the difference between secretions and excretions of body fluids and importance of genetic markers for practical skill development.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	The student will understand the importance of biological fluids in criminal investigation	K1
CO2	To understand & apply the knowledge regarding several tests used in Blood Analysis and Grouping of blood stains.	K2
CO3	To acquire, understand and apply the basic knowledge of Instrumental Techniques and Methods used in Blood Analysis.	K3
CO4	To understand the importance of genetic markers.	K4
CO5	Discuss the importance of DNA Fingerprinting in Forensic science and explain the genetic basis of DNA Fingerprinting.	K5
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Unit-I: Forensic Serology

Definition, Introduction, basic concepts- antigens, antibodies (Polyclonal and monoclonal), Affinity, avidity, Antigen-antibody binding reactions- primary and secondary. Blood: Composition, Properties of Human Blood, Collection, Preservation and Packing of Blood Evidence.

Unit-II: Forensic Examination of Blood

Identification (Preliminary and Confirmatory tests), Species of Origin. Individualization: Blood Grouping, Enzyme Typing. Instrumental Technique: Spectrophotometric Method, Electrophoresis Methods: Determination of Species of Blood: Precipitin Test (Ring test, Immuno-diffusion, Crossed-Over Electrophoresis and others methods.

Unit-III: Blood Pattern Analysis (BPA)

Introduction, Bloodstain Classification- Linear and Nonlinear spatter, Examination of Impact of Angle, directionality of Blood, Size and Shape. Interpretation of Bloodstain on Clothing and Footwear, Documentation and Photography for Bloodstain Pattern Analysis.

Unit-IV: Analysis of Biological Fluids

Composition and Examination of Biological Fluids such as Saliva, Semen, Vaginal Fluid, Urine and Sweat, Protection of Biological Evidences, Collection, Packaging, Preservation & Transportation of Biological Evidences.

Unit-V: DNA Profiling

Definition, History of DNA Typing, DNA typing systems: RFLP analysis, PCR amplifications sequence polymorphism, analysis of SNP, Y-STR, Mitochondrial DNA. Forensic significance of DNA profiling- applications in disputed cases, child swapping, missing person's identity, civil immigration, wildlife and mass disaster victim identification.

RECOMMENDED READINGS:

Medical immunology by Danniel P. Stites, Abba I. Jerr, Tristram G. Parstow, Ninth edition; Prentice Hall International Inc. 1997.

Stern, C. (1964): Principles of Human Genetics, Freeman, California.

Chatterjee, C. C-(1975) Human Physiology.

Beerman, K.E.: Blood Group Serology, Churchill, and Lincoin, P.J. (1988)

Race, R.R, and Sanger, R. (1975): Blood Groups in Man. Blackwell Scientific, Oxford.

Saferstein, R. (1982): Forensic Science Handbook, Vols. I, II, & III, Prentice Hall New Jersey.

Curry, A. S. (1965): Methods of Forensic Science, Vol IV, Interscience, New York.

Barris, H. and Hopkinson, D.A. (1976): Handbook of Enzyme, Electrophoresis Elsevier, North, Holland, New York.

Gilblet, E. (1969): Markers in Human Blood, Davis, Pensylvania

Culliford, B.E. (1971) The Examination and Typing of Blood Stains, US Deptt. of Justice, Washingron

Kirby: DNA Fingerprinting Technology.

Furley, M.A. & Harrington, J.J. (1991) Forensic DNA Technology

National Research Council (1992): DNA Technology in Forensic Science, Washington DC National Academy Press.

Chowdhari, S. (1971): Forensic Biology, B P R & D, Govt, of India.

Dunsford, I and Bowley, C. (1967): Blood Grouping Techniques, Oliver & Boyd, London

Bokert, W. G. & James, S. H. (1989) Interpretation of Blood Stain, Evidence, Elsevier, New York.

Erikson: Blood Group Serology.

DNA structure and functions by Richard R. Sinden; Academic Press, Inc. 1994. 20. DNA Structure and functions by Richard R. Sinden; Academic Press, Inc. 1994.

DNA Profiling and DNA fingerprinting; Edited by Jorg T. Epplen and Thomas Lubjuhn; Birkhauser Verlag, Switzerland, 1999.

Forensic DNA Profiling Protocols edited by Patrick J. Lincoln and Jim Thomson; Humana Press, Inc. 1998.

DNA and other Polymorphism in Forensic Science by Henry C. Lee and R.E. Gaensslen; Year book Medical Publishers, Inc. 1990.

DNA Technology in Forensic Science by committee on DNA Technology in Forensic Science, Board on Biology, Commission on Life Sciences, National Research council; National Academy Press, Washington, D.C. 1992.

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	High	High	Low	High	Medium	High
CO2	High	High	High	High	Medium	High	Medium	High
CO3	Medium	High	Medium	Medium	Low	High	Low	High
CO4	High	Medium	Low	Medium	Low	Medium	Low	Medium
CO5	High	High	High	High	High	Low	High	Low
Correlation Levels: Low Medium High								

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	Medium	Low	High
CO2	High	Low	Low	Medium	High
CO3	Medium	High	High	Low	High
CO4	High	Low	Low	Low	Medium
CO5	High	Medium	Medium	High	Low
Correlation Levels: Low Medium High					

SKILL ENHANCEMENT COURSE- 7
FORENSIC PHYSICS- LAB

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
SEC 7		**Forensic Physics- Lab**	0	0	2	2

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *On completion of this course, the students would be able to develop and establish origin of Forensic Physics and handling of Physical Evidences. The basic concepts of handling and examination of various physical evidences are vital aspect of criminal investigation. The investigation samples using scientific methods.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	**Course Outcomes**	Cognitive Levels
CO1	Understand the basic concepts of Forensic Physical Evidences.	K1 K2
CO2	Knowledge of handling and examination of Glass, Paint, Cement evidences.	K1 K2 K4
CO3	Explore the examination and handling procedure of Fiber and Soil evidences.	K1 K2 K3 K4
CO4	Understand and examine crucial information related Ballistics and tool marks	K1 K2
CO5	Analyze and conceptualize the understanding of Computer Forensics.	K4K5 K6
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

Practical's:

1. Examination of Soil Samples.
2. Examination of Density of Glass using Floatation Method.
3. Examination of Glass Fractures.
4. Examination of Tool Marks.
5. Casting and Lifting of Tyre Impressions
6. Casting and Lifting of Foot Impressions
7. Examination of Solid Samples
8. Examination of Exchange of Particles (Locard' s Principle)
9. Ballistic test of Bullets/ Projectiles
10. Test of ridges of a guns/ pistol.

RECOMMENDED READINGS:

Saferstein, R. Forensic Science Handbook 3rd ed. CRC, Press: Boca Raton; (2020).
Caddy, B. Forensic Examination of Glass and Paint: Analysis and Interpretation. CRC Press: (2001)
Murray, R.C. and Tedrow, J.C.F. Forensic Geology. Prentice Hall: New Jersey; (1998).
Dennis S. Physics in the Prevention and Detection of Crime. Contemporary Phys: (1976).
Working Procedure Manual: Physics: BPR&D Publication.
Cassidy, J.M. Footwear Identification: Canadian Govt. Publishing Centre: Canada; (1980)
Kirk, D.V. Vehicular Accident Investigation and Reconstruction: CRC Press: (2000).
Noon, R.K. Forensic Engineering Investigation. CRC Press: (2000).

Details of the evaluation procedure

- At the **first level,** for continuous assessment, the course teacher will evaluate the students for 25 marks on the following criteria
  - Regularity in attending the practical's (10 marks)
  - Regularity in submission of observations and record draft (5 marks)
  - Quality of the record (10 marks).

- At the **second level,** during the end semester examination, the evaluation will be done by a panel of internal and external examiners for 75 marks, other semester students will be the audience. The students will be evaluated on the following criteria
  - Content of presentation (25 marks)
  - Presentation skills (25 marks)
  - Ability to defend the questions (25 marks).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	High	High	Low	High	Medium	High
CO2	Low	Medium	High	Low	Medium	High	Medium	High
CO3	Medium	High	Medium	Medium	Low	High	Low	High
CO4	High	Medium	Low	Medium	Low	Medium	Low	Medium
CO5	High	Low	Low	High	High	Low	High	Low
Correlation Levels: Low Medium High								

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	Medium	Low	High
CO2	High	Low	Low	Medium	High
CO3	Medium	High	High	Low	High
CO4	Low	Low	Low	Low	Medium
CO5	Low	Medium	Medium	High	Low
Correlation Levels: Low Medium High					

SEMESTER V

CORE COURSE IX
FUNDAMENTALS OF FORENSIC MEDICINE AND TOXICOLOGY

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core IX		**Fundamentals of Forensic Medicine and Toxicology**	3	2	0	4

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- To impart knowledge of Forensic Medicine and Toxicology in students so that the he/she can learn about the medico legal aspects of crime investigation especially cases involving death and Injury. The course also intended to develop a sense of scientific thinking in student about various toxicological evidences and their forensic examination for the cause of criminal justice.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand the Basic concept of forensic medicine & Legal aspects related with it.	K1
CO2	Identify wounds and injuries	K3
CO3	Analyze the physiological aspects of death and its forensic relevance.	K5
CO4	Understand Toxicology and its significance in detection of crime.	K2
CO5	Apply chemical and biological techniques in analysing toxicological evidences.	K4
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit-I: Forensic Medicine

Definition, Historical Development. Inquest – Police, Magistrate, Medical Examiner system. Consent – meaning and types, Medico legal documents. Euthanasia.

Unit-II: Injuries

Meaning, Types of Injury: Mechanical or physical Injuries - Chemical Injuries, Miscellaneous. Determination of age and sex by skeleton.

Unit-III: Death

Meaning,Types – Somatic, Cellular.Modes of death, Manner of death, Post Mortem Changes – Immediate, Early, Late. Autopsy: Medico legal Autopsy - Meaning and Objectives, Post Mortem Report as evidence. Identification of unknown person – dead bodies and remains of person, exhumation.

Unit-IV: Forensic Toxicology

Definition, Classification of poisons. Routes of Administration of poisons. Action of poisons. Factors are modifying the actions of poisons. Post-mortem changes in death due to poison – Poisonous bites – Collection and Preservation of Toxicological evidence – Instrumental Techniques used in Identification of poisons- CG-MS, RIA, Case studies.

Unit-V: Samples required in Toxicological analysis

Selection of Post-mortem samples and reference to particular class of poison, Classes of samples (Biological and Non-biological), Methods of sample collection (Living and Dead person), Classification of matrices, choice of preservatives, containers and storage conditions. Alternative specimens: Hair analysis, Drugs in oral fluid, Detection of drugs in sweat etc. Analysis of exhumed and decomposed bodies.

Practical's Optional (Internal Evaluation 25 Marks, apart from CIA):

1. To Identify bones from given skeleton.
2. To Identify type of Injury from given Forensic model.
3. To identify metallic poisons.
4. To identify organic poisons.
5. Alcohol Intoxication & analysis.

Internal Evaluation: 25 Marks CIA+ 25 Marks Practical= 50 Marks
External Evaluation: 50 Marks

RECOMMENDED READINGS:

K. Smyth, the Cause of Death, Van Nostrand and Company, New York (1982).

M. Bernstein, Forensic odontology in, Introduction to Forensic Sciences, 2nd Ed., W.G. Eckert (Ed.), CRC Press, Boca Raton (1997).

J. Dix, Handbook for Death Scene Investigations, CRC Press, Boca Raton (1999).

H.B. Baldwin and C.P. May in, Encyclopaedia in Forensic Science, Volume 1, J.A. Siegel, P.J. Saukko and G.C. Knupfer (Eds.), Academic Press, London (2000).

V.J. Geberth, Practical Homicide Investigation, CRC Press, Boca Raton (2006).

T. Bevel and R.M. Gardner, Bloodstain Pattern Analysis, 3rd Edition, CRC Press, Boca Raton (2008).

W.J. Tilstone, M.L. Hastrup and C. Hald, Fisher's, Techniques of Crime Scene Investigation, CRC Press, Boca Raton (2013).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Medium	High	High	Low	Medium	High	High	Low
CO2	Low	High	Low	Medium	Low	High	High	Medium
CO3	Medium	Medium	Medium	Low	Low	Medium	High	Low
CO4	Low	Low	Medium	Low	Low	High	Medium	Low
CO5	Medium	Low	High	High	Low	High	High	High
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	High	High	Medium	Medium	High
CO2	Low	Medium	Low	Medium	Low
CO3	High	High	High	Low	Medium
CO4	Low	Medium	Low	Low	High
CO5	Medium	Low	Medium	High	High
Correlation Levels:		**Low**	**Medium**	**High**	

CORE COURSE X
LOCAL AND SPECIAL LAWS

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core X		**Local and Special Laws**	4	1	0	4

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- To make students get acquaint with various elements of distinctive laws and legal importance in Indian criminal justice system. The students will get knowledge about the role of state and central laws in prevention and detection of crime. The course is mainly intended to prepare the students to identify the applications of respective laws during administration of justice in real time society.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understandlegislations dealing with prevention of crime in Tamil Nadu	K2
CO2	Familiarize with Prohibition laws of Tamil Nadu	K1 K3
CO3	Understand the nature and essential principles of Tamil Nadu Police Act and Other relevant laws.	K4 K5
CO4	Acquaint with Laws related to Explosives Narcotic substances, Explosives	K3
CO5	Critically analyse various social legislations and their importance.	K4
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit-I:Local Laws- I

Tamil Nadu Acts related to prevention of crime -Tamil Nadu Prevention of Dangerous Activities of Bootleggers, Drug offences, Goondas, Immoral traffic offenders and Slum Grabbers Act, 1982.

Unit-II:Local Laws- II

Tamil Nadu Property (Prevention of Damage and Loss) Act 1992, The Tamil Nadu Prohibition Act.

Unit-III:Special Law- I

The Motor Vehicles Act, 1988,The Narcotic Drug and Psychotropic substances Act-1985.

Unit-IV: Special Law- II

The Indian Explosive Act, 1884, The Explosives Substances Act, 1908, The Arms Act1959.

Unit-V: Special Laws- III

The Protection of Civil Rights Act, 1955; The Prevention of Atrocity Act, 1989; The Dowry Prohibition Act,1961; The Eve Teasing Act, the Ragging Act in various states.

RECOMMENDED READINGS:

Sambandam – Handbook of Criminal Law and Minor Acts (Tamil Nadu) – Deccan Publications, Chennai -83

Sambandam – Handbook of Criminal rules of practices with importance PSO – Deccan Publications, Chennai –83

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	Low	Medium	Medium	Low	Low	Low	High
CO2	High	Low	High	Medium	High	Low	Low	High
CO3	High	Medium	High	Medium	Medium	Medium	Low	High
CO4	Medium	High	Medium	High	High	Medium	Medium	Low
CO5	Medium	Low	Medium	High	Medium	Medium	Low	High
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	High	Low	Low	Medium	Medium
CO2	Medium	Medium	Medium	High	Low
CO3	Medium	Medium	Medium	High	High
CO4	High	High	Medium	High	Low
CO5	Medium	High	Medium	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**		

CORE COURSE XI
FORENSIC CHEMISTRY

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core XI		**Forensic Chemistry**	3	2	0	4

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *The students would be able to understand the various types of drugs commonly abused along with their presumptive and instrumental analysis. They would know the legal provisions regarding drugs, cosmetics, and adulterated food. They would also know types of beverages and their forensic analysis and also forensic investigation of fire and arson scene evidences*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Familiarizing with basic ideas of various testing methods of chemicals and the instrumentation used in forensic chemistry	K1 K2
CO2	Analyzing trace amounts of petroleum products in crime scene evidence	K2
CO3	Analyzing Fire & Arson evidences	K3
CO4	Understanding of Adulteration made in Food and Beverages	K4 K5
CO5	The classification of explosives, including the synthesis and characterization of representative analogues	K5
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Unit-I: Forensic Chemistry

Introduction, Definition, Scope, Types of cases/exhibits, preliminary screening, presumptive test (colour and spot test), micro chemical methods of analysis, examination procedures involving standard methods and instrumental techniques, analysis of trace evidences, cosmetics and detective dyes.

Unit-II: Petroleum Products

Introduction, Classification of Petroleum Products. Examination of Petroleum Products: distillation and fractionation, various fractions and their commercial uses, standard methods of analysis of petroleum products in Forensic Exhibits.

Unit-III: **Fire & Arson**

Chemistry of fire, Origin and Cause of Fire, Types of Ignitable Liquids, Forensic Investigation of Fire and Arson Scenes, analysis of Fire and Arson exhibits by Instrumental Methods.

Unit-IV: Adulteration in Beverages

Classification of Beverages (alcoholic and non-alcoholic beverages, their composition), Examination of Alcohol in Liquor-Test for Ethyl Alcohol, Test for Methanol, Test for Furfural.

Unit-V: Explosives

Definition, Classification of explosives– speed-based explosives, sensitive based explosives, usage-based explosives; Synthesis and characteristics of TNT, PETN and RDX. Explosion process, Blasting agents, Blast waves. Colorimetric & Microcrystalline test for Explosives Bomb scene management.

RECOMMENDED READINGS:

A.A. Moenssens, J. Starrs, C.E. Henderson and F.E. Inbau, Scientific Evidence in Civil and Criminal Cases, 4th Edition, The Foundation Press, Inc., New York (1995).

R. Saferstein, Criminalistics, 8th Edition, Prentice Hall, New Jersey (2004).

W.J. Tilstone, M.L. Hastrup and C. Hald, Fisher's, Techniques of Crime Scene Investigation, CRC Press, Boca Raton (2013).

F.G. Hofmann, A Handbook on Drug and Alcohol Abuse, 2nd Edition, Oxford University Press, New York (1983).

Nabard, Introduction to Forensic Science, MHA, GOI.

Mapping of Course Outcomes to Programme Outcomes

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	Medium	High	High	High	Medium	High	Low	Low
CO2	High	High	Medium	Medium	Medium	High	Low	Low
CO3	Medium	High	Medium	Medium	Medium	High	Low	Low
CO4	Medium	High	High	Medium	Medium	High	Low	Medium
CO5	Medium	Medium	High	Medium	Low	Low	Low	Low
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	High	Low	Medium	High	High
CO2	High	High	Medium	Low	Medium
CO3	High	High	High	Low	Low
CO4	Medium	Low	Medium	Medium	High
CO5	Medium	Low	Medium	Low	High
Correlation Levels:	**Low**	**Medium**	**High**		

CORE COURSE XII
PROJECT - DISSERTATION OR CASE STUDIES

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core XII		**Project - Dissertation or Case Studies**	1	0	3	4

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- To expose the students to the steps involved in criminological research.To make the students understand basic statistical methods, collect, collate and interpret data and make inferences using statistical analysis or report the case studies in the form research dissertation in either case.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Learning Practical Experience in Conductive research	K1
CO2	Understand Applied Research	K3
CO3	Understanding types of Sampling & Statistical Usage	K4 K5
CO4	Evaluating usage of various Tool of data collection	K2
CO5	Learning Reference of Technical Report writing	K5
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

All the students are expected to take this paper compulsorily. The Objectives of this paper is to provide Opportunity for the students to make use of their knowledge regarding the various steps involved in conducting a research project under the supervision of a guide. The faculty at various stages of research will assist the students. The students will be encouraged to select their research problems relevant to the field of Criminology and Forensic Science. Students will conduct the research in Individual or Group. The completion of the research project by the students under the supervision of the faculty would provide with sufficient training to take up research related assignments in governmental and voluntary organizations within Tamil Nadu and India.

Or

The dissertation will be based on a research topic in Forensic Science/Criminology. The topic will be assigned in consultation with police and forensic science establishments, giving due consideration to the problem areas faced by these institutions. The students will be expected to undertake extensive field work, in collaboration with mobile police laboratories.

Or

Case Studies- At least 3 including one police study (Realtime).

Details of the evaluation procedure

- Each candidate has to submit a dissertation / case studies report and should appear for a viva voce before the external examiner, teachers and class mates.
- The students, after their research/ case studies will submit a record of their work which will be evaluated at two levels.

- At the **first level,** for continuous assessment, the teacher will evaluate the students for 25 marks on the following criteria
    - Regularity in attending the visits (10 marks)
    - Regularity in submission of reports (5 marks)
    - Quality of the reports (10 marks).

- At the **second level**, during the end semester examination, the evaluation will be done by a panel of internal and external examiners for 75 marks.

    - A viva voce, where other semester students will be the audience
    - The students will be evaluated on the following criteria
        - Content of presentation (25 marks)
        - Presentation skills (25 marks)
        - Ability to defend the questions (25 marks).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	Low	High	High	High	Low	Low
CO2	High	Low	Medium	High	High	Low	Medium	High
CO3	Medium	Medium	Low	High	High	Medium	Low	High
CO4	Low	Medium	Low	Medium	Medium	Medium	Low	Medium
CO5	Low	High	High	Low	Low	High	High	Low
Correlation Levels: Low Medium High								

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	Medium	Medium	High
CO2	Medium	Low	Low	Medium	Low
CO3	High	High	High	Low	Medium
CO4	Medium	Low	Low	Low	High
CO5	Low	Medium	Medium	High	High
Correlation Levels: Low Medium High					

ELECTIVE V GENERIC/ DISCIPLINE SPECIFIC

BASICS OF FORENSIC PSYCHOLOGY

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Elective V		**Basics of Forensic Psychology**	3	1	0	3

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objective of the course are

- To make students familiar with basic concepts of criminal and forensic psychology and to understand the origin of criminal behaviour, the course also emphasizes on learning about detection of deceptions using various scientific methods.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	The overview of criminal psychology and its applications.	K1
CO2	The legal aspects of criminal psychology.	K2
CO3	The importance of psychological assessment in gauging criminal behavior.	K3
CO4	The tools and techniques required for detection of deception using forensic techniques.	K4
CO5	The critical assessment of advanced forensic techniques like polygraphy, Narco analysis and brain electrical oscillation signatures.	K5
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit-I: Basics of Criminal Psychology

Definition and fundamental concepts of criminal psychology and criminal psychiatry. Psychology and law. Ethical issues in criminal psychology. Assessment of mental competency. Mental disorders and criminal psychology.

Unit-II: Psychology of evidence

Eyewitness testimony, confession evidence. Criminal Profiling. Psychology in the courtroom, with special reference to Section 84 BNS.

Unit-III: Criminal Behaviour and Forensic Psychology

Psychopathology and personality disorder. Psychological assessment and its importance. Serial Murderers. Psychology of terrorism. Biological factors and psycho-social factors, abuse. Juvenile delinquency, Child abuse (physical, sexual, emotional), juvenile sex offenders, legal controversies.

Unit-IV: Forensic Psychology: Polygraph

Historical aspects of Polygraph, Principles of polygraph, psycho physiological aspects, operational aspects, Question formulation techniques, Interviewing technique procedure, The Art-Polygraph, Legal and Ethical aspects, Human rights of individual.

Unit-V: Forensic Psychology: Narco-Analysis

Historical aspects, Principle and Theory, General Procedure –Legal and Ethical aspects, Human rights of individual. Brain Electrical Oscillation Signature (BEOS) Profiling: Principle and Theory, General Procedure – Legal and Ethical aspects, Human rights of individual.

RECOMMENDED READINGS:

A.A. Moenssens, J. Starrs, C.E. Henderson and F.E. Inbau, Scientific Evidence inCivil and Criminal Cases, 4th Edition, The Foundation Press, Inc., New York(1995).

R. Saferstein, Criminalistics, 8th Edition, Prentice Hall, New Jersey (2004).

J.C. DeLadurantey and D.R. Sullivan, Criminal Investigation Standards, Harper &Row, New York (1980).

J. Niehaus, Investigative Forensic Hypnosis, CRC Press, Boca Raton (1999).

E. Elaad in Encyclopaedia of Forensic Science, Volume 2, J.A. Siegel, P.J. Saukkoand G.C. Knupfer (Eds.), Academic Press, London (2000).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Medium	High	Medium	High	Low	Medium	Low	Medium
CO2	High	High	Medium	High	Medium	Medium	Low	Medium
CO3	High	Medium	Medium	High	Medium	Medium	Low	Medium
CO4	Medium	Medium	Medium	High	Low	Medium	Low	Medium
CO5	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	High	High	Medium	High	High
CO2	High	Medium	Medium	Medium	Medium
CO3	High	Medium	Medium	Medium	High
CO4	High	High	Medium	High	Medium
CO5	Medium	Medium	Medium	High	High
Correlation Levels:	**Low**	**Medium**	**High**		

ELECTIVE VI GENERIC/ DISCIPLINE SPECIFIC
FORENSIC CHEMISTRY- LAB

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Elective VI		**Forensic Chemistry- Lab**	0	0	4	3

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *The students would be able to understand the various types of drugs commonly abused along with their presumptive and instrumental analysis. They would know the legal provisions regarding drugs, cosmetics, and adulterated food. They would also know types of beverages and their forensic analysis and also forensic investigation of fire and arson scene evidences*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Familiarizing with basic ideas of various testing methods of chemicals and the instrumentation used in forensic chemistry	K1 K2
CO2	Analyzing trace amounts of petroleum products in crime scene evidence	K3
CO3	Analyzing Fire and Arson evidences	K4 K5
CO4	Understanding of Adulteration made in Food and Beverages	K1
CO5	The classification of explosives, including the synthesis and characterization of representative analogues	K4
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Practical's:

1. To carry out analysis of Gasoline
2. To carry out analysis of gasoline.
3. To carry out analysis of diesel.
4. To test for presence of ethanol in Liquor
5. To Test Toxicological fluids
6. To carry out analysis of serological fluids
7. To carry a poison analysis.
8. To prepare report a case report on bomb scene management

RECOMMENDED READINGS "

A.A. Moenssens, J. Starrs, C.E. Henderson and F.E. Inbau, Scientific Evidence in Civil and Criminal Cases, 4th Edition, The Foundation Press, Inc., New York (1995).

R. Saferstein, Criminalistics, 8th Edition, Prentice Hall, New Jersey (2004).

W.J. Tilstone, M.L. Hastrup and C. Hald, Fisher's, Techniques of Crime Scene Investigation, CRC Press, Boca Raton (2013).

F.G. Hofmann, A Handbook on Drug and Alcohol Abuse, 2nd Edition, Oxford University Press, New York (1983).

Details of the evaluation procedure

- At the **first level,** for continuous assessment, the course teacher will evaluate the students for 25 marks on the following criteria
  - Regularity in attending the practical's (10 marks)
  - Regularity in submission of observations and record draft (5 marks)
  - Quality of the record (10 marks).

- At the **second level,** during the end semester examination, the evaluation will be done by a panel of internal and external examiners for 75 marks, other semester students will be the audience. The students will be evaluated on the following criteria
  - Content of presentation (25 marks)
  - Presentation skills (25 marks)
  - Ability to defend the questions (25 marks).

Mapping of Course Outcomes to Programme Outcomes

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	Medium	High	High	High	Medium	High	Low	Low
CO2	High	High	Medium	Medium	Medium	High	Low	Low
CO3	Medium	High	Medium	Medium	Medium	High	Low	Low
CO4	Medium	High	High	Medium	Medium	High	Low	Medium
CO5	Medium	Medium	High	Medium	Low	Low	Low	Low
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	High	Low	Medium	High	High
CO2	High	High	Medium	Low	Medium
CO3	High	High	High	Low	Low
CO4	Medium	Low	Medium	Medium	High
CO5	Medium	Low	Medium	Low	High
Correlation Levels:	**Low**	**Medium**	**High**		

SUMMER INTERNSHIP/ INDUSTRIAL TRAINING
MINI PROJECT- INTERNSHIP

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Internship		**Mini Project- Internship**	0	0	2	2

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- To expose the students to the functioning of the forensic agencies (Government and Private). The students will be exposes to the functioning of the allied agencies of the Criminal Justice System. To introduce the students to work in the agency/ institution of their interest and learn hands forensic training. To create the functional knowledge of the industrial setup.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Familiarizing with basic ideas of various functions of forensic department and private forensic agencies	K1 K2 K3
CO2	Provide field level to exposure to students	K3
CO3	Importance and functioning of allied forensic agencies	K4
CO4	Understand importance and confidentiality in forensic services	K5
CO5	Develop a report based on the work experience and knowledge gained	K5
K1: Remember **K2:** Understand **K3:** Apply **K4:**Analyze**K5:** Evaluate **K6:** Create		

Course Outline:

All the students are expected to take this paper compulsorily. The objective of this paper is to provide field level experience to the students of criminology and professionally equip them to find appropriate places in the allied fields of Criminology. The students will be placed for internship at anyone of the following agencies for a period of 30 days (Probably during the summer, just after IV semester examinations). The agencies to be covered for internship includes

GovernmentForensic Departments

- MFSL
- DFSL
- SFSL
- CFSL
- Private Forensic Agencies
- Private Fringer Print Bureau
- Cyber Security agencies
- Information Audit
- Cyber Forensic agencies
- Security agencies
- Police- State, Central or International Organisation
- Special police divisions
- Organisation such as CBI, IB, NIA, NSF, Cybercrime Cell or SB/ CB CID etc.,

During this period the students are expected to work for the organization under the guidance of an experienced person. The students will take up the regular activities of the organization like field work, administrative activities, samples collection, scene of crime, follow-up of old cases, conduct chemical, physics, biology, serology, viscera test andany other related activities, training, report writing, awareness creation, surveillance, undercover operation, security related aspects etc., depending upon the requirements of the organization. Each student will be evaluated by his/her supervisor in the organization during the internship period, through a Confidential performance appraisal report filled

and sent to the Head of the Department, directly. The students are required to submit a record based on activities/roles performed by them during the internship. The student will be evaluated at the end of the semester based on the performance appraisal report, record, and a viva-voce.

Details of the evaluation procedure

- Each candidate has to submit an internship report and should appear for a viva voce before the external examiner, teachers and class mates.
- The students, after their internship will submit a report of their work which will be evaluated at two levels.

- At the **first level,** for continuous assessment, the teacher will evaluate the students for 25 marks on the following criteria
  - Regularity in attending the host institution (15 marks)- CPAR
  - Regularity in submission of reports (5 marks)
  - Quality of the reports (5 marks).

- At the **second level,** during the end semester examination, the evaluation will be done by a panel of internal and external examiners for 75 marks.

  - A viva voce, where other semester students will be the audience
  - The students will be evaluated on the following criteria
    - Content of presentation (25 marks)
    - Presentation skills (25 marks)
    - Ability to defend the questions (25 marks).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	Low	High	Low	Medium	Low	High	Medium
CO2	Medium	High	High	Medium	Low	Low	High	Medium
CO3	High	Medium	High	Low	Medium	Medium	Medium	Medium
CO4	Medium	High	Medium	Low	Low	Low	High	Medium
CO5	High	Low	High	Low	Medium	Low	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	Low	High	Low	Medium
CO2	High	Low	High	Low	Medium
CO3	Medium	High	Medium	Low	Low
CO4	Medium	Low	Low	High	Medium
CO5	Low	Medium	Low	High	Medium
Correlation Levels:	**Low**	**Medium**	**High**		

SEMESTER VI

CORE COURSE XIII
FORENSIC BIOLOGY

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core XIII		**Forensic Biology**	4	2	0	4

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *The students would learn the different aspects of Forensic Biology and some very specific areas such as Forensic Botany, Wild Life Forensics, Forensic Microbiology and Forensic Entomology. The students shall also study in detail the Forensic Examination of Hair and Diatoms Samples*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	To understand the nature and importance of biological& Entomological evidences in Forensic Science.	K1 K2 K5
CO2	To understand the various aspects of Forensic Botany & types of Botanical Evidences and to Present comprehensive knowledge of Pollens, Diatoms and its importance in drowning cases.	K3
CO3	Familiarize with new trend named Wildlife Forensics aid in conserving natural resources.	K4 K5
CO4	Know about role of Forensic Entomology assists in death investigations.	K5
CO5	Analyse significance of Forensic Microbiology.	K5
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit-I: Forensic Biology

Introduction, Nature and importance of biological evidence Basic Concept in Brief Significance of hair evidence Structure of human hair. Comparison of hair samples. Morphology and biochemistry of human hair. Comparison of human and animal hair.

Unit-II: Forensic Botany

Introduction, Applications of Forensic Botany, Botanical Evidences: Wood: Types of Wood, Methods of comparison. Leaves: Identification of various types of leaves and their anatomy, Methods of comparison. Pollens: Structure, function, methods of identification and comparison. Diatoms: Nature, location, structure, extraction from various body tissues, preparation of slides, methods of identification and comparison, Forensic Significance.

Unit-III: Forensic Microbiology

Microbial Forensics- Forensically relevant bacteria's and their significance, Microbial profiles as identification tools, use of microorganisms in bioterrorism, Anthrax, transmission of HIV as a criminal act, role of microbes in food poisoning.

Unit-IV:Wild Life Forensics

Introduction and Significance of Wild Life Forensics Crimes against Wild life. Protected and Endangered Species of Animals and Plants. Identification and Examination of wild life materials such as skin, Hair, fur, bones, nails, horn, teeth, flowers and plants, by conventional and modern methods, Identification of Pug marks of various animals.

Unit-V: Forensic Entomology

Introduction and Forensic Significance of Entomology, Insects of Forensic Importance, Collection of Entomological Evidences during Death Investigations, Insect Succession on corpse and its relationship to determine Time Since Death. Case study.

RECOMMENDED READINGS:

Chowdhuri, S. (1971): Forensic Biology, B P R & D, Govt. of India.

Robertson, J. (1996): Forensic Examination of Hair. Taylor and Francis, USA.

Boorman, K. E: Blood Group Serology, Churchill, and Lincolin, P. J. (1988)

Race, R. R. and Sangar, R. (1975): Blood Groups in Man. Blackwell Scientific, Oxford.

Saferstein, R. (1982): Science Handbook, Vol. I, II and III, Prentice Hall, New Jersey.

Gilblet, E. (1969): Marker 's in Human Blood, Davis, Pennsylvania.

Culliford, B. E. (1971), The examination and Typing of Blood Stains, US Deptt. of Justice, Washington.

Chowdhuri, S. (1971): Forensic Biology, B P R & D, Govt. of India.

Dunsford, I. and Bowley, C. (1967): Blood Grouping Techniques, Oliver & Boyd, London.

Eckert, W. G. & James, S.H. (1989): Interpretation of Blood Stain, Evidence, Elsevier, New York

Advanced Forensic Biology and Serology James,S.H. and Nordby, J.J. Forensic Science: An Introduction to Scientific and Investigative Techniques 4 th ed. CRC Press: USA; (2015).

Saferstein, R. Criminalistics-An Introduction to Forensic Science 6th ed. PrenticeHall: New Jersey;(1998).

Sharma, B.R. Forensic Science in Criminal Investigation and Trials3rded. Universal Law Publishing: New Delhi; (2001).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Medium	High	Medium	High	Low	Medium	Low	Medium
CO2	High	High	Medium	High	Medium	Medium	Low	Medium
CO3	High	Medium	Medium	High	Medium	Medium	Low	Medium
CO4	Medium	Medium	Medium	High	Low	Medium	Low	Medium
CO5	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Correlation Levels:		**Low**	**Medium**	**High**				

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	High	High	Medium	High	High
CO2	High	Medium	Medium	Medium	Medium
CO3	High	Medium	Medium	Medium	High

CO4	High	High	Medium	High	Medium
CO5	Medium	Medium	Medium	High	High
Correlation Levels:		**Low**	**Medium**	**High**	

CORE COURSE XIV
DNA FORENSIC

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core XIV		**DNA Forensic**	4	2	0	4

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:
The main objectives of this course are

- *The students will be exposed to basic principle of DNA analysis, the forensic significance of DNA typing, the importance of short tandem repeats and restriction fragment length polymorphism in DNA technique. They will also be explained of the role of DNA typing in parent age testing*

Course Outcomes (COs):
At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand DNA collection from human fluids	K1 K2
CO2	Familiarize with procedures involved in classification of human fluids.	K3
CO3	Describing steps involved in DNA Forensics.	K4 K5
CO4	Understand the sources of DNA from animals.	K5
CO5	Establish the source, testify and submit the DNA analysis to court/ party.	K5
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit I:Basics of DNA
Basic Principles - DNA as biological blueprint of life - Extraction of DNA for analysis. Quantitation of DNA – yield gel quantitation and slot blot quantitation. Mitochondrial DNA – sequence analysis.

Unit II:Forensic DNA
Forensic DNA Typing - Collection of specimens. Polymerase chain reaction – historical perspective, sequence polymorphisms, individualization of evidence.

Unit III: Polymorphism
Short tandem repeats (STR) – role of fluorescent dyes, nature of STR loci - Restriction fragment length polymorphism (RFLP) – genetic markers used in RFLP, typing procedure and interpretation of results - Touch DNA.

Unit IV: Forensic Testing of DNA
Parentage Testing - Principles of heredity. Genetics of paternity. DNA testing in disputed paternity. Mandelian laws of parentage testing. Mathematical basis of parentage identification - Missing body cases. Reference populations and databases.

Unit V: Testing and Reporting DNA Forensic
Report Writing: Role of DNA typing in identifying unrecognizable bodies - Allele frequency

determination. Hardy-Weinberg law. Probability determination in a population database.

RECOMMENDED READINGS

J.M. Butler, *Forensic DNA Typing*, Elsevier, Burlington(2005).

K. Inman and N. Rudin, *An Introduction to Forensic DNA Analysis*, CRC Press, Boca Raton(1997).

H. Coleman and E. Swenson, *DNA in the Courtroom: A Trial Watcher's Guide*, GeneLex Corporation, Washington (1994).

W.J. Tilstone, M.L. Hastrup and C. Hald, Fisher's, *Techniques of Crime Scene Investigation*, CRC Press, Boca Raton(2013).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	High	Low	Medium	High	High	Low
CO2	Low	High	Low	Medium	Low	High	High	Medium
CO3	Medium	Medium	Medium	High	High	Medium	High	Low
CO4	Low	Low	Medium	Low	Low	High	Medium	Low
CO5	Medium	Low	High	High	Low	High	High	High
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	Medium	Medium	High
CO2	High	High	High	High	Low
CO3	High	High	High	Low	Medium
CO4	Low	Medium	Low	Low	High
CO5	Medium	Low	Medium	High	High
Correlation Levels:	**Low**	**Medium**	**High**		

CORE COURSE XV
FORENSIC ANTHROPOLOGY

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Core XV		**Forensics Anthropology**	4	2	0	4

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *The students will be exposed to* the importance of forensic anthropology in identification of persons. Different techniques of facial reconstruction and their forensic importance, appreciate significance of somatoscopy andsomatometry.

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand importance and need for forensic anthropology	K1
CO2	Describing the steps and classification of human by race, age, body structure and etc.	K2 K3
CO3	Familiarize with procedures involved in facial reconstruction.	K4 K5
CO4	Understand the significance of somatoscopy in forensic anthropology.	K5
CO5	Apply somatometryin forensic anthropologyand investigation.	K5
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Unit I: Basics of Forensic Anthropology

Significance of Forensic Anthropology - Scope of forensic anthropology. Study of human skeleton. Nature, formation, and identification of human bones. Determination of age, sex, stature from skeletal material.

Unit II: Personal Identification

Personal Identification – Somatoscopy and Somatometry - Somatoscopy – observation of hair on head, forehead, eyes, root of nose, nasal bridge, nasal tip, chin, Darwin's tubercle, ear lobes, supra-orbital ridges, physiognomic ear breadth, circumference of head. Scar marks and occupational marks.

Unit III: Somatometry

Somatometry – measurements of head, face, nose, cheek, ear, hand and foot, body weight, height - Indices - cephalic index, nasal index, cranial index, upper facial index.

Unit IV: Facial Reconstruction

Facial Reconstruction - Portrait Parle / Bertillon system. Photofit/ identity kit. Facial superimposition techniques - Cranio facial super impositiontechniques, photographic superimposition,video super imposition.

Unit V: Superimposition

Roentgenographic superimposition. Use of somatoscopic and craniometric methods in reconstruction - Importance of tissue depth in facialreconstruction - Genetic and congenital anomalies – causes, types,

identification and their forensic significance.

RECOMMENDED READINGS:

M.Y. Iscan and S.R. Loth, The scope of forensic anthropology in, Introduction to Forensic Sciences, 2nd Ed., W.G. Eckert (Ed.), CRC Press, Boca Raton(1997).

D. Ubelaker and H. Scammell, Bones, M. Evans & Co., New York(2000).

S. Rhine, Bone Voyage: A Journey in Forensic Anthropology, University of Mexico Press, Mexico(1998).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	High	High	High	Low	Medium	High	High	Low
CO2	Low	High	Low	Medium	Low	High	High	Medium
CO3	Medium	Medium	Medium	High	High	Medium	High	Low
CO4	Low	Low	Medium	Low	Low	High	Medium	Low
CO5	Medium	Low	High	High	Low	High	High	High
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	High	High	Medium	Medium	High
CO2	High	High	High	High	Low
CO3	High	High	High	Low	Medium
CO4	Low	Medium	Low	Low	High
CO5	Medium	Low	Medium	High	High
Correlation Levels:	**Low**	**Medium**	**High**		

ELECTIVE VII GENERIC/ DISCIPLINE SPECIFIC
PENOLOGY AND CORRECTIONAL ADMINISTRATION

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Elective VII		**Penology and Correctional Administration**	4	1	0	3

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *The main objective of the paper is to introduce the students' various types of punishments and their significance in Indian criminal justice system. The course will educate the students about the origin and development and reformation of theories related to penal policies and their practice different correctional institutions in India.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	Understand nature of various types of punishments and their significance.	K1 K2
CO2	Know about important theories of punishment and their policy implications.	K3
CO3	Familiarize with historical aspects of prison system in India.	K5
CO4	Understand role of various correctional institutions.	K2
CO5	Explore community based correctional setups and their procedural aspects.	K4
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

UnitI: Nature of Punishment

Definition, nature and scope. Conventional Vs Contemporary Punishments- Types of Punishment. Corporal and Capital Punishment.

UnitII: Theories of Punishment

Retributive theory, Preventive theory, Deterrence theory, Reformation theory.

UnitIII: Prison Systems

Historical development of Prison system in India. Prison Manual. Prison Act.

UnitIV: Correctional Institutions

Adult Institutions- Central, District and Sub Jails. Juvenile Institutions: Observation Homes, Special Homes. Women Institutions: Vigilance Home, Protective home. Open Prisons.

UnitV: Community based Corrections

Probation- Concept and Scope, Historical development of probation. Probation in India– Probation of offenders Act. Probation procedures: Pre-sentence Investigation report, Revocation of probation etc. Parole: Meaning and Scope. Parole - provisions and rules. After Care services.

RECOMMENDED READINGS:

Andrew Von Hirsch, (1987) Past or future crimes: Deservedness and Dangerousness in the Sentencing of Criminals, Rutgers University Press.

Ahmed Siddique, (1993). Criminology, Problems and Perspectives, III Edn., Eastern Book Company, Lucknow.

Bhattacharya S.K., (1986). Probation system in India, Manas Publications, New Delhi.

Brodie, S.R., (1976). Effectiveness of sentencing, Home office, London.

Chockalingam K., (1993). Issues in Probation in India, Madras University Publications, Madras.

Christopher J. Emmins, (1985). A practical approach to sentencing, Financial Training Publications Ltd., London.

Devasia, V.D &Leelamma Devasia, (1992). Criminology, Victimology and Corrections, S.B.Mangia for Ashish Publishing House, New Delhi.

Goswami, B.K. (1980). Critical Study of Criminology and Penology, Allahabad Agency, Allahabad.

Ghosh, S., (1992). Open Prisons and the Inmates, Mittal Publications, New Delhi.

Naresh Kumar, (1986). Constitutional Rights of Prisoners, Mittal Publishers, New Delhi.

Mulla Committee Report on Prison Reforms, 1983. Govt. of India. 12.

Paranjepe, N.V., (2002). Criminology and Penology, Central Law Publications, Allahabad

Mapping of Course Outcomes to Programme Outcomes

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	Medium	Medium	Low	Low	Low	Low	Medium	Low
CO2	Medium	High	High	Medium	Low	Medium	Low	Low
CO3	Low	Low	Low	Low	Medium	Medium	Medium	Low
CO4	Medium	Medium	High	Medium	Medium	Medium	High	Medium
CO5	High	High	Medium	Medium	High	High	High	Low
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	Low	Low	Low	Low	Low
CO2	Low	Medium	Low	Low	Low
CO3	Medium	Low	Medium	Low	Low
CO4	Medium	Medium	Medium	Low	Low
CO5	Medium	Medium	Medium	Low	Low
Correlation Levels:	**Low**	**Medium**	**High**		

ELECTIVE VIII GENERIC/ DISCIPLINE SPECIFIC
FORENSIC BIOLOGY- LAB

Course Code	Sub Code	TITLE OF THE COURSE	L	T	P	C
Elective VIII		**Forensic Biology- Lab**	1	0	4	3

L: Lecture T: Tutorial P: Practical C: Credits

Course Objectives:

The main objectives of this course are

- *The students would learn the practical aspects of Forensic Biology and some very specific areas such as Forensic Botany, Wild Life Forensics, Forensic Microbiology and Forensic Entomology. The students shall try to study in detail the Forensic Examination of Hair and Diatoms Samples under laboratory conditions.*

Course Outcomes (COs):

At the end of this course of study, the student will be able to

CO No.	Course Outcomes	Cognitive Levels
CO1	To understand the nature and importance of biological& Entomological evidences in Forensic Science.	K1 K2 K5
CO2	To establish types of botanical evidences and to present comprehensive knowledge of Pollens, Diatoms and its importance in drowning cases.	K3
CO3	Familiarize with new trend named Wildlife Forensics aid in conserving natural resources.	K4 K5
CO4	Knowledge of Forensic Entomology and relation in death investigations.	K3 K5
CO5	Analyse significance of Forensic Microbiology.	K5
K1: Remember K2: Understand K3: Apply K4:AnalyzeK5: Evaluate K6: Create		

Course Outline:

Practical's:

1. To Study the Morphology of Human Scalp Hair
2. Study of pollen grains of forensic significance.
3. Mounting diatoms on slide for Observation.
4. To Study the Morphology of Animal Scalp Hair
5. Collection packing and forwarding of biological evidence.
6. To identify blood stains by presumptive Test
7. To identify blood stain by Confirmative Tests
8. Test To identify semen stains.
9. To identify saliva stains
10. Separation of DNA by Agarose gel electrophoresis

RECOMMENDED READINGS:

Chowdhuri, S. (1971): Forensic Biology, B P R & D, Govt. of India.
Robertson, J. (1996): Forensic Examination of Hair. Taylor and Francis, USA.
Boorman, K. E: Blood Group Serology, Churchill, and Lincolin, P. J. (1988)
Race, R. R. and Sangar, R. (1975): Blood Groups in Man. Blackwell Scientific, Oxford.
Saferstein, R. (1982): Science Handbook, Vol. I, II and III, Prentice Hall, New Jersey.

Gilblet, E. (1969): Marker 's in Human Blood, Davis, Pennsylvania.
Culliford, B. E. (1971), The examination and Typing of Blood Stains, US Deptt. of Justice, Washington.
Chowdhuri, S. (1971): Forensic Biology, B P R & D, Govt. of India.
Dunsford, I. and Bowley, C. (1967): Blood Grouping Techniques, Oliver & Boyd, London.
Eckert, W. G. & James, S.H. (1989): Interpretation of Blood Stain, Evidence, ElSevier, New York
James,S.H. and Nordby, J.J. Forensic Science: An Introduction to Scientific and Investigative Techniques 4 th ed. CRC Press: USA; (2015).
Saferstein, R. Criminalistics-An Introduction to Forensic Science 6th ed. PrenticeHall: New Jersey;(1998).
Sharma, B.R. Forensic Science in Criminal Investigation and Trials3rded. Universal Law Publishing: New Delhi; (2001).

Details of the evaluation procedure

- At the **first level,** for continuous assessment, the course teacher will evaluate the students for 25 marks on the following criteria
  - Regularity in attending the practical's (10 marks)
  - Regularity in submission of observations and record draft (5 marks)
  - Quality of the record (10 marks).

- At the **second level,** during the end semester examination, the evaluation will be done by a panel of internal and external examiners for 75 marks, other semester students will be the audience. The students will be evaluated on the following criteria
  - Content of presentation (25 marks)
  - Presentation skills (25 marks)
  - Ability to defend the questions (25 marks).

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Medium	High	Medium	High	Low	Medium	Low	Medium
CO2	High	High	Medium	High	Medium	Medium	Low	Medium
CO3	High	Medium	Medium	High	Medium	Medium	Low	Medium
CO4	Medium	Medium	Medium	High	Low	Medium	Low	Medium
CO5	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Correlation Levels:	**Low**	**Medium**	**High**					

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	High	High	Medium	High	High
CO2	High	Medium	Medium	Medium	Medium
CO3	High	Medium	Medium	Medium	High
CO4	High	High	Medium	High	Medium
CO5	Medium	Medium	Medium	High	High
Correlation Levels:	**Low**	**Medium**	**High**		

EXTENSION ACTIVITY- Compulsory Paper

CourseCode	Sub Code	TITLEOFTHE COURSE	L	T	P	C
Extension Activity		**Extension Activity**	**0**	**0**	**0**	**1**

L:Lecture T:Tutorial P:Practical C:Credits

Thissubject is compulsory for all the students involving extension activities of the department vis Crime Prevention/ Public Safety/ Crime Prevention Awareness campaigns organised by the department via Schools, Colleges, City, Villages and industrial campaigns, every student shall participate in these activities.

CourseObjectives:

*Themainobjectivesofthiscoursearet*o

- Understand the application knowledge of criminology in Realtime via- public safety
- Appreciate the suitable campaigns for various populations'
- Support various agencies of criminal justice to counter crime prevention.

Mapping of Course Outcomes to Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	Low	Low	Medium	Low	Low	Low	High	Medium
CO2	Low	Low	Medium	Low	Medium	High	High	Medium
CO3	Medium	Low	High	Low	Medium	High	High	High
CO4	Medium	Medium	High	Low	High	Medium	Medium	High
CO5	Medium	Low	Medium	Low	High	High	High	Medium
Correlation Levels: Low Medium High								

Mapping of Course Outcomes to Programme Specific Outcomes (PSOs)

	PSO 1	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
CO1	Medium	Medium	Low	Low	Medium
CO2	Medium	High	Medium	Low	Medium
CO3	Medium	High	Low	Medium	High
CO4	High	High	Low	High	High
CO5	High	Medium	Low	Medium	Medium
Correlation Levels: Low Medium High					

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