MATS University

MATS SCHOOL OF SCIENCES

SYLLABUS

FOR

Three Year Full Time Bachelor Degree Program

BACHELOR OF SCIENCE

B.Sc. Forensic Science

SEMESTER PATTERN

(2025 - 2028)

GENERAL INTRODUCTION OF THE DEPARTMENT

MATS School of Sciences (MSS) was established with a vision to create technocrats in the applied branches of Sciences to convey updated scientific knowledge. In the school the performances of the students are constantly monitored by continuous assessment. The School believes in supplementing academic input of students with the help of regular Seminar, Guest Lectures, Industrial/Research Institute visits and encouraging the students to participate in National & International Seminars, Conferences and Workshops.

DEPARTMENT HIGHLIGHTS

- Research focus on frontier of Life Sciences and affordable healthcare
- Highly acclaimed scientists as faculty
- State-of-the-art Lab facilities
- Hand-on training on sophisticated equipments
- Academia – Industry interface
- Multidisciplinary research in affordable healthcare, Agriculture and Food

COURSEDESIGN

The department follows a unique course-design which is contemporary and cutting-edge. It includes modern and advanced papers/ subjects including the papers from Management Science as given in the curriculum matrix

PEDAGOGY

- Chalk Board, LCD and Projector based teaching
- Research based teaching
- Project based learning
- Separate lab bench for each student

FACILITIES

State-of-the-art facilities include:

- Double beam UV- Visible Spectrophotometer, Cooling Centrifuge, Microfuge, Incubators, Microscopes, Laminar flow hoods, Colorimeter, Micro- and regular balance, Electronic Balance Autoclave, Glass distillation apparatus, Computers, Deep freeze, pH meter, conductivity meter, DNA/RNA & Protein Electrophoresis apparatus, Plant Tissue Culture racks with light arrangements, Shakers, BOD incubator & Orbital Shaking Incubator etc
- Microbial cell culture
- Plant tissue culture

FACULTIES

- Well experienced faculties from Academic Institutes and Industries
- Invited lectures by eminent scientists from different countries

B. SC. FORENSIC SCIENCE: SCOPE AND CONTENT

A three-year undergraduate degree that applies science to law and crime investigation. It combines concepts from chemistry, biology, physics, medicine, law, and criminology to analyze evidence and support the justice system. General Forensic Science, Cyber security firms (with specialization), Banks & insurance companies (fraud, document examination), Police departments (crime scene units, scientific assistants), Law enforcement & intelligence agencies, hospitals & medico-legal departments (with further qualification), Private forensic labs and detective/investigation agencies. Typical roles: Forensic Scientist, Crime Scene Investigator, Lab Analyst, Document Examiner, Fingerprint Expert, Cyber Forensic Analyst, Scientific Assistant, Research Assistant, etc

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OBJECTIVES OF THE B.Sc. FORENSIC SCIENCE PROGRAM (Three Years)

1. To provide fundamental knowledge of forensic science principles, crime scene investigation, and the application of scientific methods in legal contexts.
2. To develop practical skills in forensic laboratory techniques such as fingerprint analysis, bloodstain pattern analysis, toxicology, and questioned document examination.
3. To train students in scientific evidence handling, including proper collection, preservation, documentation, and chain-of-custody procedures.
4. To build analytical and critical thinking abilities required for interpreting forensic evidence and solving criminal cases scientifically.
5. To familiarize students with forensic instrumentation and technologies such as chromatography, spectroscopy, DNA profiling, and cyber forensic tools.
6. To impart knowledge of criminal laws, ethics, and legal procedures, enabling students to understand the medico-legal importance of forensic evidence.
7. To encourage research aptitude and innovative thinking in forensic investigation, forensic chemistry, forensic biology, and toxicology.
8. To prepare students for higher education and professional careers in forensic science, criminal investigation, forensic laboratories, law enforcement agencies, and private forensic consultancies.

ELIGIBILITY FOR ADMISSION:

Interested aspirants for B.Sc. Forensic Science degree need to fulfill the below mentioned eligibility criteria.

- Completion of Higher Secondary (10+2) level of education.
- Physics, chemistry and biology/mathematics as main subjects at HSC level
- Instead of biology, one may even have had any subject related to biological sciences as one of the mainsubject of study.

PROGRAM OUTCOME:

PO1: Scientific Knowledge :Apply fundamental principles of chemistry, biology, physics, and forensic science to analyze physical, biological, and chemical evidence.
PO2: Crime Scene Investigation Skills: Demonstrate proper techniques for crime scene handling, evidence collection, preservation, documentation, and chain of custody maintenance.
PO3: Analytical and Laboratory Skills:Perform forensic laboratory analyses including toxicology, serology, DNA profiling (basic level), ballistics, fingerprint analysis, and questioned document examination.
PO4: Critical Thinking and Problem Solving:Analyze forensic evidence critically, interpret data scientifically, and solve criminal investigation problems using logical reasoning.
PO5: Use of Modern Forensic Tools: Utilize modern forensic instruments, software, and investigative technologies in accordance with standard operating procedures.
PO6: Ethical and Legal Responsibility:Interpret and apply legal procedures, ethical guidelines, and professional responsibilities related to forensic investigations and expert testimony.
PO7: Communication Skills: Communicate forensic findings effectively through scientific reports, presentations, and courtroom testimony using appropriate technical terminology.
PO8: Teamwork and Leadership:Work effectively as an individual and as a member of multidisciplinary investigative teams including police, medical officers, and legal professionals.
PO9: Research and Lifelong Learning: Demonstrate basic research skills, data interpretation, and the ability to pursue higher education, research, and continuous professional development.
PO10: Societal and Professional Impact:Apply forensic science knowledge responsibly for public safety, justice delivery, and societal well-being.

PROGRAM SPECIFIC OUTCOMES:

PSO 1:

Graduates will be able to **apply forensic science principles and laboratory techniques** for the collection, preservation, analysis, and interpretation of physical, biological, and chemical evidence in criminal investigations.

PSO 2:
Graduates will develop the ability to **analyze forensic evidence scientifically and ethically**, including fingerprints, documents, biological samples, toxicological substances, and digital data, while adhering to legal and professional standards.

PSO 3:
Graduates will be prepared for **professional careers in forensic laboratories, law enforcement agencies, and research institutions**, and will also be equipped for higher studies and specialized training in forensic science and allied disciplines.

CAREER PROSPECTS:

Forensic Scientist (State/Central Forensic Science Laboratories – FSL/CFSL), Crime Scene Investigator / Crime Scene Officer, Scientific Assistant / Lab Analyst, Police Department (Forensic Unit), Intelligence Bureau (IB) & CBI (after further qualification), Judicial Services (with further law studies), Defence Services (Technical/Scientific roles), Cyber Crime Investigator, Digital Evidence Examiner, Mobile & Computer Forensics Expert, Ethical Hacker / Security Analyst, Data Forensics Analyst, Chemical and Pharmaceutical industry Specialist etc.

THE MAIN JOB SECTORS ARE AS FOLLOWS:

Forensic Science companies, Health service organizations, Pharmaceutical companies, Universities and Research institute, Research Scientist, University Professor / Lecturer, Crime Research Analyst, Law Enforcement.

ATTENDANCE:
A candidate shall be deemed to have undergone a regular course of study in the University, if he/she has attended at least 60% of the lectures in each subject will be at least 75% in the aggregate of lectures, tutorials and practical in order to be eligible to appear at the Final Examination.

SCHEME OF EXAMINATION, EVALUATION AND DISTRIBUTION OF MARKS:

1. The overall weightage of a course in the Syllabi and Scheme of Teaching & Examination shall bedetermined in terms of Marks assigned to the course.
2. The evaluation of students in a course shall have two components unless specifically stated otherwise inthe Scheme of Teaching & Examination and Syllabi:

(i) Evaluation through a semester-end examination (University Examination Marks)
(ii) Continuous evaluation by the teacher(s) of the course.

		Bachelor's degree/ Under-graduate diploma	Master's degree/ Post-graduate diploma
A.	**THEORY COURSES**		
	(i) Semester-end examination	70%	70%
	(ii) Continuous evaluation by the teachers	30%	30%
B.	PRACTICAL/LABORATORY COURSES		
	(i) Semester-end examination	70%	70%
	(ii) Continuous evaluation by the teachers	30%	30%
C.	DISSERTATION/THESIS		
	(i) Assessment by External Examiner	70%	70%
	(ii) Assessment by Internal Examiner	30%	30%

CONTINUOUS EVALUATION (INTERNAL MARKS)

(i) Theory courses

The division of internal marks will of 50% marks for mid semester examination and 50% of marks for the internal class tests. There shall be three class tests held during each semester. These class tests shall ordinarily be held after 4 weeks, 8 weeks and 12 weeks of teaching in accordance with the University Academic Calendar.

(ii) Practical/Laboratory courses

The total internal marks in practical /Laboratory courses shall be based on performance in the laboratory, regularity, practical exercises /assignments, quizzes, etc. The assessment shall be given at three nearly equi-spacedintervals.

PASSING MARKS:

For undergraduate students, obtaining a minimum of 40% marks in aggregate in each course shall be essential for passing the course and earning its assigned credits. A candidate, who secures less than 40% of marks in a course, shall be deemed to have failed in that course.

GRADING SYSTEM:

For UG:

80% and above – "10 Grade Point" and Letter Grade "O" (Outstanding)

40% and above but below 45% - "Grade Point 4" and Letter Grade "P" (Pass)

For PG:

80% and above – "10 Grade Point" and Letter Grade "O" (Outstanding)

45% and above but below 50% - "Grade Point 4" and Letter Grade "P" (Pass)

PROGRAM DURATION:

The maximum permissible period for completing a program for which the prescribed program duration is **n semesters**, shall be **(n+4)** semesters. All the program requirements shall have to be completed in (n+4) semesters.

ATKT CRITERIA:

ATKT Candidate means a candidate who failed in not more than forty percent of the total number of Core and Core bracket papers, excluding the Practical Examination / Project Work / Viva Voce Examination in the Semester Examination and is appearing in the Examination of same semester again which is organized with the next Semester Examination. Forty percent will be rounded off to higher side in case it is not a whole number. In case a Students fails or was absent in Practical Examination / Project Work / Viva Voce Examination, he/she may be allowed to have ATKT exam on his/her own expenses.

Syllabus B.Sc. Forensic Science

		Bachelor's degree/ Under-graduate diploma	Master's degree/ Post-graduate diploma
A.	**THEORY COURSES**		
	(i) Semester-endexamination	70%	70%
	(ii) Continuous evaluation by theteachers	30%	30%
B.	PRACTICAL/LABORATORY COURSES		
	(i) Semester-endexamination	70%	70%
	(ii) Continuous evaluation by the teachers	30%	30%
C.	DISSERTATION/THESIS		
	(i) Assessment by ExternalExaminer	70%	70%
	(ii) Assessment by InternalExaminer	30%	30%

Curriculum Matrix of B.Sc. Forensic Science

	SEM I			Maximum Marks		Total Marks
	Code	Forensic Science	Credit (L+T+P)	External	Internal	
Discipline Specific Core (DSC)	01FS1101	Introduction to Forensic Science	4 (4+0+0)	70	30	100
	01FS1102	Criminology and Police Science	4 (4+0+0)	70	30	100
	01FS1103	Chemistry-I	4 (4+0+0)	70	30	100
Discipline Specific Core Practical (DSCP)	01FS1104	Lab Course: Crime scene investigation I	2 (0+0+2)	35	15	50
	01FS1105	Lab Course: Criminology and Police Science	2 (0+0+2)	35	15	50
	01FS1106	Lab Course: Chemistry I	2 (0+0+2)	35	15	50
Abillity Enhancement Compulsory Course (AECC)	01AE1101	Environmental Studies	2 (2+0+0)	35	15	50
Skill Enhancement Course (SEC)	01SE1101	Instrumentation and system biology	2 (2+0+0)	35	15	50
	Total		22 (16+0+6)	385	165	550

NOTE: Each SEC paper and DSE paper should have minimum 15 students

L= Lecture, T=Tutorial, P= Practical, 1 credit = 1 hour of teaching/week, 2 hours of Lab/week

Coding Pattern: 1st digit denote semester; 2nd digit for type of paper (1-DSC/DSE, 2-Lab/Practical, 3-For others such as AECC/SEC); 3rd& 4th digit for Paper Number

Curriculum Matrix of B.Sc. Forensic Science

	SEM II			Maximum Marks		Total Marks
	Code	Forensic Science	Credit (L+T+P)	External	Internal	
Discipline Specific Core (DSC)	01FS1201	Criminal Law	4 (4+0+0)	70	30	100
	01FS1202	Forensic Psychology	4 (4+0+0)	70	30	100
	01FS1203	Chemistry-II	4 (4+0+0)	70	30	100
Discipline Specific Core Practical (DSCP)	01FS1204	Lab Course: Criminal Law	2 (0+0+2)	35	15	50
	01FS1205	Lab Course: Forensic Psychology	2 (0+0+2)	35	15	50
	01FS1206	Lab Course: Chemistry II	2 (0+0+2)	35	15	50
Abillity Enhancement Compulsory Course	01AE1201	English	2 (2+0+0)	35	15	50

(AECC)						
Skill Enhancement Course (SEC)	**01SE1201**	**Crime scene management**	**2 (2+0+0)**	**35**	**15**	**50**
	Total		**22 (16+0+6)**	**385**	**165**	**550**
NOTE: Each SEC paper and DSE paper should have minimum 15 students						
L= Lecture, T=Tutorial, P= Practical, 1 credit = 1 hour of teaching/week, 2 hours of Lab/week						
Coding Pattern : 1st digit denote semester; 2nd digit for type of paper (1-DSC/DSE, 2-Lab/Practical, 3-For others such as AECC/SEC); 3rd& 4th digit for Paper Number						

Curriculum Matrix of B.Sc. Forensic Science

	SEM III			**Maximum Marks**		**Total Marks**
	Code	**Forensic Science**	**Credit (L+T+P)**	**External**	**Internal**	
Discipline Specific Core (DSC)		**Forensic Dermatoglyphics**	**4 (4+0+0)**	**70**	**30**	**100**
		Technological methods in Forensic Science	**4 (4+0+0)**	**70**	**30**	**100**
		Chemistry - III	**4 (4+0+0)**	**70**	**30**	**100**
Discipline Specific Core Practical (DSCP)		**Lab Course: Forensic Dermatoglyphics**	**2 (0+0+2)**	**35**	**15**	**50**
		Lab Course: Technological methods	**2 (0+0+2)**	**35**	**15**	**50**
		Lab Course: Chemistry - III	**2 (0+0+2)**	**35**	**15**	**50**
Abillity Enhancement Compulsory Course (AECC)		**Introduction to Biometry**	**2 (2+0+0)**	**35**	**15**	**50**
Skill Enhancement Course (SEC)		**Computational Biology and Bioinformatics**	**2 (2+0+0)**	**35**	**15**	**50**
	Total		**22 (16+0+6)**	**385**	**165**	**550**
NOTE: Each SEC paper and DSE paper should have minimum 15 students						
L= Lecture, T=Tutorial, P= Practical, 1 credit = 1 hour of teaching/week, 2 hours of Lab/week						
Coding Pattern : 1st digit denote semester; 2nd digit for type of paper (1-DSC/DSE, 2-Lab/Practical, 3-For others such as AECC/SEC); 3rd& 4th digit for Paper Number						

Curriculum Matrix of B.Sc. Forensic Science

	SEM IV			Maximum Marks		Total Marks
	Code	Forensic Science	Credit (L+T+P)	External	Internal	
Discipline Specific Core (DSC)		Forensic Chemistry	4 (4+0+0)	70	30	100
		Questioned documents	4 (4+0+0)	70	30	100
		Chemistry - IV	4 (4+0+0)	70	30	100
Discipline Specific Core Practical (DSCP)		Lab Course: Forensic Chemistry	2 (0+0+2)	35	15	50
		Lab Course: Questioned Documents	2 (0+0+2)	35	15	50
		Lab Course: Chemistry - IV	2 (0+0+2)	35	15	50
Abillity Enhancement Compulsory Course (AECC)		Economic Offences	2 (1+1+0)	35	15	50
Skill Enhancement Course (SEC)		Cyber Forensic and Cyber security	2 (1+1+0)	35	15	50
	Total		22 (14+2+6)	385	165	550

NOTE: Each SEC paper and DSE paper should have minimum 15 students

L= Lecture, T=Tutorial, P= Practical, 1 credit = 1 hour of teaching/week, 2 hours of Lab/week

Coding Pattern : 1st digit denote semester; 2nd digit for type of paper (1-DSC/DSE, 2-Lab/Practical, 3-For others such as AECC/SEC); 3rd& 4th digit for Paper Number

Curriculum Matrix of B.Sc. Forensic Science

	SEM V			Maximum Marks		Total Marks
	Code	Forensic Science	Credit (L+T+P)	External	Internal	
Discipline Specific Core (DSC)		Forensic Ballistics	4 (4+0+0)	70	30	100
		Forensic Toxicology	4 (4+0+0)	70	30	100
		Forensic Biology and Serology	4 (4+0+0)	70	30	100
Discipline Specific Core Practical (DSCP)		Lab Course: Forensic Toxicology	2 (0+0+2)	35	15	50
		Lab Course: Forensic Biology and Serology	2 (0+0+2)	35	15	50
		Seminar/ Presentation	2	35	15	50
Abillity Enhancement Compulsory Course (AECC)		Forensic Serology	2 (1+1+0)	35	15	50
	Total		20 (13+1+6)	350	150	500

NOTE: Each SEC paper and DSE paper should have minimum 15 students

L= Lecture, T=Tutorial, P= Practical, 1 credit = 1 hour of teaching/week, 2 hours of Lab/week

Coding Pattern : 1st digit denote semester; 2nd digit for type of paper (1-DSC/DSE, 2-Lab/Practical, 3-For others such as AECC/SEC); 3rd& 4th digit for Paper Number

Curriculum Matrix of B.Sc. Forensic Science

	SEM VI			Maximum Marks		Total Marks
	Code	Forensic Science	Credit (L+T+P)	External	Internal	
Discipline Specific Core (DSC)		Forensic Anthropology	4 (4+0+0)	70	30	100
		Forensic Medicine	4 (4+0+0)	70	30	100
		Dissertation/Internship	6 (6+0+0)	100	50	150
Discipline Specific Core Practical (DSCP)		Lab Course: Forensic Anthropology	2 (0+0+2)	35	15	50
		Lab Course: Forensic Medicine	2 (0+0+2)	35	15	50
		Seminar/ Presentation	2 (2+0+0)	35	15	50
	Total		20 (16+0+4)	345	155	500

NOTE: Each SEC paper and DSE paper should have minimum 15 students

L= Lecture, T=Tutorial, P= Practical, 1 credit = 1 hour of teaching/week, 2 hours of Lab/week

Grand Total (For Three Years Degree)	128	2235	965	3200