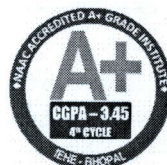


Department of Forensic-Science

**Institute for Excellence in Higher Education (IEHE),
Bhopal (MP)**



**NAAC Re-accredited (Fourth Cycle) Autonomous College
Under the UGC Scheme with 'A+' Grade (CGPA-3.45)**

**Program Outcomes (POs),
Program Specific Outcome (PSOs)
&
Course Outcomes (COs)
of
Department of Forensic Science**

**B.Sc./B.Sc. (Honours) Forensic Science
(Session: 2023-2024)**

Programmes offered in the Institute

Under Graduate Programmes

- B.Com.(4-Year UG programme under NEP-2020)
- B.Com.Honours (Management/Account) (3-Year UG programme under old pattern)
- B.A. (Major: Economics/History/Psychology/Sociology/Political-Science/English-Literature/Hindi-Literature/Geography/Fashion Designing) (4-Year UG programme under NEP-2020)
- B.A.Honours (Economics/History/Psychology/Sociology/Political Science/English-Literature/Hindi-Literature/Geography/Fashion-Designing) (3-Year UG programme under old pattern)
- **B.Sc. (Major: Physics/Chemistry/Computer-Science/Mathematics/Electronics/Biotechnology/Geography/Forensic-Science/Clinical Nutrition and Dietetics)**(4-Year UG programme under NEP-2020)
- **B.Sc. Honours**(Physics/Chemistry/Computer-Science/Mathematics/Electronics/Biotechnology/Geography/Forensic-Science) (3-Year UG programme under old pattern)
- B.B.A.(4-Year UG programme under NEP-2020)(New)
- B.P.E.S. (3-Year UG programme)(New)

Post Graduate Programmes

- MA (Economics)
- MA (English)
- MA (Hindi) (New)
- MA (History)
- MA (Political Science)
- MA (Psychology) (New)
- MA (Public Administration)
- MA (Sociology) (New)
- MA (Social Work)
- M.Sc. (Biotechnology)
- M.Sc. (Chemistry)
- M.Sc. (Mathematics)
- M.Sc. (Physics)
- M.Com. (Marketing Management)

Courses offered by Vocational Cell (IEHE)

Diploma Courses (16)

1. Diploma in Financial Services (DFS)
2. Diploma in Human Resources Development (DHRD)
3. Diploma in Communicative English (DCE)
4. Diploma in Guidance and Counselling Psychology (DGC)
5. Diploma in Industrial Work & Management System (DIWMS)
6. Diploma in Statistical Analysis (DSA)
7. Diploma in Taxation (DIT)
8. Diploma in Creative Arts (DCrA)
9. Diploma in Computer Application (DCA)
10. Diploma in Tourism & Hospitality Management (DTHM)
11. Diploma in Forensic Science (DFSc.)
12. Diploma in Remote Sensing & GIS (DRSG)
13. Diploma in Hostel Management (DHM) *
14. Diploma in Retail Marketing Management (DRMM)
15. Diploma in Banking Financial Services and Insurance (DBFSAI)
16. Diploma in Data Science and Analysis (DDA) – NEW

Certificate Courses (16)

1. Certificate Courses in English Creative Writing (CECW)
2. Certificate Courses in Research Methodology (CRM)
3. Certificate Courses in Instrumentation & Electronic Maintenance (CIEM)
4. Certificate Courses in Cyber Security (CCS)
5. Certificate Courses in Spoken English (CSE)
6. Certificate Course in Intellectual Property Right (CIPR)
7. Certificate Courses in French Language (CFL)
8. Certificate Courses in Hostel Management (CHM)
9. Certificate Courses in Retail Marketing Management (CRMM)
10. Certificate Courses in Banking Financial Services and Insurance (CBFSAI)
11. Certificate Course in Advance Excel (CCAE) – NEW
12. Certificate Course in Psychological Assessment and Tool Development (CPATD) – NEW
13. Certificate Course in Basics in Geogebra (CCBG) – NEW
14. Certificate Course in Cooking and Baking (CCCB) – NEW
15. Certificate Course in Emotional Intelligence (CCEI) – NEW
16. Certificate Course in Packaging and Designing (CCPD) - NEW

Training Courses (06)

1. 45 Hours Training Programme in Food Processing & Preservation (FPP)
2. 30 Hours Training Programme in (MATLAB)
3. 30 Hours Training Programme in (SPSS)
4. 30 Hours Training Programme in Tally
5. 30 Hours Training Programme in Traditional Art (TPTA)
6. CII-IWN-IEHE Finishing School

Special Courses

- Foundation Course in Civil Services Examinations (FCCSE)
- Joint Admission Test for M.Sc. (JAM)

Program Outcomes (PO) of the Under-Graduate Courses Offered in the Institute

- PO1: Domain Knowledge:** Capable of demonstrating comprehensive knowledge & understanding of one or more other disciplines that form a part of an undergraduate programme of study.
- PO2: Critical Thinking:** Critically evaluate practices, policies and theories by following scientific approach to knowledge development. Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
- PO3: Problem Solving and Analytical Skills:** Ability to think rationally, analyse situations and solve problems adequately.
- PO4: Information and Digital Literacy:** Capability to use ICT in a variety of learning situations. Demonstrate ability to access, evaluate and use a variety of relevant information sources; and use appropriate software for analysis of data.
- PO5: Communication Skills:** The capacity to communicate effectively using appropriate media, to present complex information in a clear & concise manner. Acquire the learning abilities by focusing on LSRW (Listening, Speaking, Reading & Writing skill, which provide a stage to the students to sharpen their capacity to learn more.
- PO6: Social Interaction and sensitivity towards the societal issues:** Work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group and act together as a group or a team in the interests of a common cause. Elicit views of others, mediate disagreements and help reach conclusions in group settings.
- PO7: Self-directed & Life-long Learning:** Acquire the potential to engage in independent & life-long learning in the broadest context socio-technological changes. Critical sensibility to live experiences, with self-awareness and reflexivity of both and society.
- PO8: Environment and Sustainability:** Understand the issues of environmental contexts & sustainable development.
- PO9: Moral and Ethical Awareness:** Ability to embrace moral/ ethical values in conducting one's life, possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups.
- PO10: Effective Citizenship:** Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
- PO11: Research-related skills:** A sense of inquiry and capability for asking relevant/appropriate questions, problematizing, synthesizing and articulating; Ability to recognize cause and effective relationships, define problems, formulate hypotheses, interpret and draw conclusions from data, ability to plan, execute and report the results of an experiment or investigation. Efficiency to apply one's learning to real life situations or in interdisciplinary areas.
- PO12: Leadership and Management Skills:** Competence to use skills in organizing for people to reach a shared goal. During leading a project, ability to motivate others to complete a series of tasks, often according to a schedule.
- PO13: Employability and Entrepreneurial Skill:** Ability to develop employability skills such as, positive attitude, good business sense, willingness to learn, resilience, ability to work under pressure, optimism, adaptability, perseverance and motivation, and a host of similar skills.

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PROGRAMME OUTCOMES (PO): B.Sc.

Predefined Programme Outcomes	<i>Students taking admission to this program of B.Sc. get equipped with following outcomes:</i>
PO1	Domain Knowledge: Acquiring knowledge of fundamentals, basic Mathematics, domain knowledge of proper scientific models and Computing Specialization from defined problems and explaining the basic scientific principles and methods.
PO2	Scientific thinking: Inculcating scientific thinking and awareness, getting an ability to use necessary current techniques, skills, and modern tools.
PO3	Problem Analysis: Identifying, formulating, & analysing complex problems, reaching substantiated conclusions using first principles of Mathematics, natural sciences and electronic sciences.
PO4	Communication: Communicate concepts, designs, and solutions of scientific activities effectively and professionally with society at large.
PO5	Information & Digital Literacy: Capability to use ICT in a variety of learning situations. Demonstrate ability to access, evaluate and use a variety of relevant information sources; and use appropriate software for analysis of data.
PO6	Ethical Awareness: Ability to embrace moral/ ethical values in conducting one's life, possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to support the values required for collaborative work such as mutual trust & fairness.
PO7	Environment & Sustainability: Understanding the impact of scientific solutions on societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
PO8	Self-directed and Life-long Learning: Acquire the ability to engage in independent and life- long learning in the broadest context socio-technological changes. Critical sensibility to live experiences, with self-awareness and reflexivity of both and society.
PO9	Research-related skills: <ul style="list-style-type: none"> • Acquiring familiarity with emerging areas of different subjects in science and their applications in various spheres of sciences and getting appraise of its relevance in future studies. • Getting ability to apply various statistical tools to research problems and ability to build statistical knowledge and knowing the statistical organization in India and abroad. • Developing scientific intuition, ability and techniques to tackle problems either theoretical or experimental in nature.
PO10	Employability Skill: Ability to develop employability skills such as, positive attitude, good business sense, willingness to learn, resilience, ability to work under pressure, optimism, adaptability, perseverance and motivation, and a host of similar skills.

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Programme Specific Outcomes (PSO): Forensic Science (Honours/Major Subject)

Programme Specific Outcomes	<i>The students taking up this program of B.Sc. (BA/B.Sc./B.Com.) with Forensic Science (Honours/Major) as a special subject of study, receive the following outcomes:</i>
PSO-1	The students will understand the nature and fundamentals of Forensic Science, Criminalistics, Crime Scene Management, Forensic Physics and Ballistics, Forensic Chemistry, Forensic Biology, Cyber Forensics, Some specific Indian Laws (i.e. IPC, Cr PC, IEA and Indian Constitution etc.), Questioned Documents, Fingerprints and other impression's examination.
PSO-2	The students will be able to apply various conventional and modern scientific tools, techniques, methods and procedures of physical, chemical and biological as well as the cyber and computer sciences in the field of Forensic Science.
PSO-3	The students will learn to perform examinations of different forensically important exhibits (physical evidences) encountered in cases of murder, rape, suicide, accidental death, theft, illegal trafficking, cyber-crimes, fire, arson and explosion, forgery as per the laboratory standards or SOPs.
PSO-4	The students will be able to form opinions or to give scientific reports in the court of law.
PSO-5	The students will be able to learn the use of new ICT tools in diverse fields of forensic science.
PSO-6	The students will be able to learn the moral or ethical values of a forensic scientist.
PSO-7	The students will be able to develop new, economical and eco-friendly methods, tools, techniques or hand-held devices, kits etc. to safeguard the nearby ecosystem or environment.
PSO-8	The students will be able to understand about the boundaries of criminal justice system at national and international level. This will make them aware about the crime, criminal and investigation process which will help to solve the cases effectively.
PSO-9	The students will be able to acquire knowledge related to the research and innovations done in the field of certain domains of forensic sciences which will promote or motivate them to be involved in the research and development activities.
PSO-10	After completing this course, they will be able to lead in the crime scene management or investigation way better than the normal graduates. The students will also be able to place themselves in different public and private sectors of forensic sciences. Apart from this, they can come up with the start-ups or new business ideas.

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Mapping of PSOs B.Sc. Forensic Science(*Honours/Major*) with POs (Under-Graduate)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13
PSO-1			*	*			*						
PSO-2							*			*		*	
PSO-3	*												
PSO-4		*		*			*		*			*	
PSO-5	*												
PSO-6			*		*	*	*						
PSO-7		*											
PSO-8	*			*		*		*		*		*	
PSO-9	*												
PSO-10		*	*		*			*	*			*	

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Course Outcomes (COs)

Semester: I

Introduction to Forensic Science& Criminalistics (Paper Code: MJS-187) (Major)

Course Outcomes	<i>The students taking up this course of B.Sc. with Introduction to Forensic Science& Criminalistics(Major)as a special subject of study receive the following outcomes:</i>
CO-1	The student will be able to remember &understand about the organizational setup of forensic science laboratories in India.
CO-2	The student will be able to learn & appear the methods of securing, searching and documenting crime scenes.
CO-3	The student will be able to learn examination & identification of physical evidence in criminal investigation.
CO-4	The student will be able to learn the art of collecting, packaging and labelling and forwarding different types of physical and trace evidence at crime scenes.
CO-5	After the successfully completing the course, student will be able to join forensic science laboratory, police service. Private detective or security agency or start his/her own investigation agency.

Semester: I

Introduction to Forensic Science& Criminalistics (Paper Code: MNS-188) (Minor)

Course Outcomes	<i>The students taking up this course of B.Sc. with Introduction to Forensic Science& Criminalistics(Minor) as a special subject of study receive the following outcomes:</i>
CO-1	The student will be able to remember &understand about the organizational setup of forensic science laboratories in India.
CO-2	The student will be able to learn & appear the methods of securing, searching and documenting crime scenes.
CO-3	The student will be able to learn examination & identification of physical evidence in criminal investigation.
CO-4	The student will be able to learn the art of collecting, packaging and labelling and forwarding different types of physical and trace evidence at crime scenes.
CO-5	After the successfully completing the course, student will be able to join forensic science laboratory, police service. Private detective or security agency or start his/her own investigation agency.

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Semester: I

Crime Scene Management (Paper Code: GES-187) (Generic Elective)

Course Outcomes	<i>The students taking up this course of BA/B.Sc./B.Com. with Crime Scene Management(Generic Elective) as a special subject of study receive the following outcomes:</i>
CO-1	The students will be able to define and demonstrate crime scene management along with the searching, collection, preservation, packaging, labelling and forwarding of physical evidences to the forensic science laboratories for their examinations as well as the documentation and reconstruction of scene of crime.
CO-2	The students will be able to articulate the challenges of crime scene management
CO-3	The students will be able to study the crime scene evidence of various nature
CO-4	The students will be able to understand the crime scene documentation
CO-5	The students will be able to learn the crime scene photography and reconstruction

Semester: II

Criminology and Criminal Justice System (Paper Code: MJS-287) (Major)

Course Outcomes	<i>The students taking up this course of B.Sc. with Criminology and Criminal Justice System(Major) as a special subject of study receive the following outcomes:</i>
CO-1	The students will be able to learn about the crimes, criminals, police, court procedures and usefulness of IPC, CrPC, IEA etc.
CO-2	The students will be able to understand the significance of criminology
CO-3	The students will be able to explain the causes of crime and criminal behaviour.
CO-4	The students will be able to understand the legal aspects of criminal law and criminal Justice system
CO-5	The students will be able to apply the basics of the constitution of India and various other Indian Laws related to the criminal investigation.

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Semester: II

Forensic Chemistry and Toxicology (Paper Code: MNS-288) (Minor)

Course Outcomes	<i>The students taking up this course of B.Sc. with Forensic Chemistry and Toxicology(Minor) as a special subject of study receive the following outcomes:</i>
CO-1	To educate the students about the basic concepts and make them aware about the forensic chemistry and toxicology along with the crime scene processing and examinations of chemicals, drugs and poisons of different origin and nature encountered in various cases.
CO-2	Students should be able to define forensic chemistry-related problems clearly, develop testable hypotheses regarding collected evidence, design and execute experiments to analyze this evidence, analyze data using appropriate instrumental and statistical methods, and draw appropriate conclusions.
CO-3	Interpret the functioning of the justice system, police organizations, forensic scientists, techniques involved in collection, preservation and evaluation of evidences; various aspects of the allied sciences that assist in forensic investigation protocols, and the step-by-step development of the investigative procedures.
CO-4	The student will be able to explain the classification and characteristics of the narcotics, drugs and psychotropic substances, analyse the menace of designer drugs and demonstrate the methods of identifying and purifying narcotics, drugs and psychotropic substances.

Semester: II

Forensic Dermatoglyphics & Biometrics (Paper Code: GES-287) (Generic Elective)

Course Outcomes	<i>The students taking up this course of B.Sc. (BA/BSc/B.Com.) with Forensic Dermatoglyphics & Biometrics(Generic Elective) as a special subject of study receive the following outcomes:</i>
CO-1	To impart understanding of human fingerprints, types and its classification,
CO-2	To apply and analyse the mechanism of detection and development of latent fingerprints.
CO-3	To determine the significance of palm prints, lip prints, ear prints, foot prints etc. in the criminal investigation
CO-4	To understand the basic concepts of Biometrics and its significance.
CO-5	To interpret the biometric data.

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Semester: III

Questioned Documents & Computer Forensic (Paper Code: MJS- 387) (Major)

Course Outcomes	<i>The students taking up this course of B.Sc. with Questioned Documents & Computer Forensic(Major) as a special subject of study receive the following outcomes:</i>
CO-1	The student will be able to Understand questioned documents and its types.
CO-2	The student will be able to learn tools and techniques used for the examination of questioned documents.
CO-3	The student will be able to learn identification of different types of written documents and to detect forgery in written and printed document.
CO-4	The student will be able to get an idea of computer, hardware and software, networking, interfaces, cybercrime, security issues, crime on internet, hacking and computer viruses. etc.
CO-5	After the successfully completing the course, student will be able to join police service, private detective or security agency or start this/her own investigative agency

Semester: III

Fingerprints, Biometrics & Anthropometry (Paper Code: MNS- 388) (Minor)

Course Outcomes	<i>The students taking up this course of B.Sc. with Fingerprints, Biometrics & Anthropometry(Minor) as a special subject of study receive the following outcomes:</i>
CO-1	The student will be able to understand how fingerprints can be used for personnel and criminal Identification.
CO-2	The student will be able to Explain different method used for examination of fingerprints.
CO-3	The student will be able to understand utilization of face, ear, iris and retina in biometric analysis.
CO-4	The student will be able to get an idea of human skeleton, personal identification, use of facial features for identification, bite marks and teeth for personal identification.
CO-5	After successfully completing the course, student will be able to identify an individual through fingerprints, alert towards cheating and became more responsible, apart from that student can join private detective or security agency or start his/her own investigative agency.

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Semester: III

Cyber Forensic (Paper Code: GES- 387) (Generic Elective)

Course Outcomes	<i>The students taking up this course of B.Sc. with Cyber Forensic(Generic Elective) as a special subject of study receive the following outcomes:</i>
CO-1	The student will be able to understand the basics of computer, hardware, software, networking and its interfaces.
CO-2	The student will be able to understand the application of computer in crime detection, investigation of cyber-crime, security issues and security breach.
CO-3	The student will be able to know all about the crime on internet and cybercrimes
CO-4	The student will be able to get an idea of the collection, handling and analysis of digital evidences.
CO-5	After successfully completing the course, student will be more responsible and aware towards computer and cybercrime and can educate the society.

Semester: III

Handwriting Identification & Recognition (Paper Code: Voc/SEC-XXX) (Voc/SEC)

Course Outcomes	<i>The students taking up this course of B.Sc. with Handwriting Identification & Recognition (Vocational/SEC) as a special subject of study receive the following outcomes:</i>
CO-1	The student will be able to learn important features in handwriting identification
CO-2	The student will be able to understand basis of handwriting characteristics.
CO-3	The student will be able to know the factors influencing handwriting
CO-4	The student will be able to get an idea of Examine handwriting using different tools and techniques
CO-5	After successfully completing the course, student will be able to Understand the basics of handwriting recognition

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Semester: IV

Fingerprints, Biometrics & Anthropometry (Paper Code: MJS- 487) (Major)

Course Outcomes	<i>The students taking up this course of B.Sc. with Fingerprints, Biometrics & Anthropometry(Major) as a special subject of study receive the following outcomes:</i>
CO-1	The student will be able to understand how fingerprints can be used for personnel and criminal Identification.
CO-2	The student will be able to understand different method used for examination of fingerprints.
CO-3	The student will be able to understand utilization of face, ear, iris and retina in biometric analysis.
CO-4	The student will be able to get an idea of human skeleton, personal identification, use of facial features for identification
CO-5	After successfully completing the course, student will be able to identify an individual through fingerprints, alert towards cheating and became more responsible, apart from that student can join private detective or security agency or start his/her own investigative agency.

Semester: IV

Basic Instrumental Techniques in Forensic Science (Paper Code: MNS- 488) (Minor)

Course Outcomes	<i>The students taking up this course of B.Sc. with Basic Instrumental Techniques in Forensic Science(Minor) as a special subject of study receive the following outcomes:</i>
CO-1	The student will be able to understand the theoretical and practical concepts of spectroscopic techniques and their applications in various forensic fields.
CO-2	The student will be able to understand the theoretical and practical concepts of chromatographic techniques and their applications in various forensic fields.
CO-3	The student will be able to understand the theoretical and practical concepts of sample preparation techniques its applications in various forensic fields.
CO-4	The student will be able to get an idea of the theoretical and practical concepts of electrophoresis and its applications in various forensic fields.
CO-5	After successfully completing the course, student will get an ideas about various start-ups and self-employability .

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Semester: IV

Fraud Detection in Documents & Fingerprint (Paper Code: GES- 487) (*Generic Elective*)

Course Outcomes	<i>The students taking up this course of B.Sc. with Fraud Detection in Documents& Fingerprint(Generic Elective) as a special subject of study receive the following outcomes:</i>
CO-1	The student will be able to understand questioned documents and its types.
CO-2	The student will be able to understand Tools and techniques used for the examination of questioned documents
CO-3	The student will be able to understand Identification of different types of written documents and to detect forgery in written and printed document.
CO-4	The student will be able to understand how fingerprints can be used for personnel and criminal identification.
CO-5	After the successful course completion, students will be more responsible and aware towards documental frauds, can educate the society and it can also be used as an additional qualification

Semester: IV

Tools & Techniques in Criminal Investigation (Paper Code: Voc/SEC-XXX) (*Voc/SEC*)

Course Outcomes	<i>The students taking up this course of B.Sc. with Tools & Techniques in Criminal Investigation(Vocational/SEC) as a special subject of study receive the following outcomes:</i>
CO-1	The student will be able to learn important features in handwriting identification.
CO-2	The student will be able to understand basis of handwriting characteristics.
CO-3	The student will be able to understand the factors influencing handwriting
CO-4	The student will be able to get an idea of Examine handwriting using different tools and techniques
CO-5	After successfully completing the course, student will be able to Understand the basics of handwriting recognition

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Semester: V

Forensic Biology and Serology) (Paper Code: MJS- 587T) (Major)

Course Outcomes	<i>The students taking up this course of B.Sc. with Forensic Biology and Serology (Major) as a special subject of study receive the following outcomes:</i>
CO-1	Understand the fundamentals of biology including the cell organelles and their functions, difference between eukaryotic and prokaryotic cell, difference between plant and animal cell, difference between somatic and germinal cell.
CO-2	Know the concepts of forensic biology including hair and fibre analysis.
CO-3	Gain the knowledge of biological fluids and their examination.
CO-4	Understand the concepts of forensic entomology, life cycle of insects and their forensic significance.
CO-5	Know the morphology of different plants and their forensic significance in criminal investigation under forensic botany.

Semester: V

Instrumental Techniques-Physical (Paper Code: DSE- 587T) (DSE)

Course Outcomes	<i>The students taking up this course of B.Sc. with Instrumental Techniques- Physical (DSE) as a special subject of study receive the following outcomes:</i>
CO-1	Explain the basic concepts of analytical chemistry.
CO-2	Demonstrate the preparation of samples, their qualitative and quantitative analysis and data handling.
CO-3	Explain the basic principle and working of spectroscopic technique that could lead to professional job opportunities in testing laboratories.
CO-4	Show the electro-chemical methods, colorimetry, voltammetry, which may facilitate initiating small-scale start-ups .
CO-5	Explain the basic concepts of analytical chemistry.

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Semester: V

Forensic Medicine and Drug of Abuse (Paper Code: SEC- 587T) (SEC/Vocational)

Course Outcomes	<i>The students taking up this course of B.Sc. with Forensic Medicine and Drug of Abuse (SEC/Vocational) as a special subject of study receive the following outcomes:</i>
CO-1	Understand the basic concepts of forensic medicines and will know how forensic medicine is different from medicine.
CO-2	Know the objectives of personal identification and its necessity in criminal investigation.
CO-3	Understand the concepts and objectives of post mortem examination along with death and its sign and symptoms.
CO-4	Explain the type and cause of injuries and its legal and medico-legal aspects.
CO-5	Understand and explain about the drugs of abuse, clandestine laboratories and various types of drugs of abuse and its testing laboratory at national and international level along with doping.

Semester: VI

Forensic Chemistry and Toxicology Paper Code: MJS-687 (T) (Major)

Course Outcomes	<i>The students taking up this course of B.Sc. with Forensic Chemistry and Toxicology (Major) as a special subject of study receive the following outcomes:</i>
CO-1	To educate the students about the basic concepts of forensic chemistry and toxicology along with the crime scene processing and examinations of chemicals, drugs and poisons of different origin and nature encountered in various cases.
CO-2	Students should be able to define forensic chemistry-related problems clearly, develop test able hypotheses regarding collected evidence, design and execute experiments to analyze this evidence, analyze data using appropriate instrumental and statistical methods, and draw appropriate conclusions.
CO-3	Interpret the functioning of the justice system, police organizations, forensic scientists, techniques involved in collection, preservation and evaluation of evidences; various aspects of the allied sciences that assist in forensic investigation protocols, and the step by step development of the investigative procedures.
CO-4	The student will be able to explain the classification and characteristics of the narcotics, drugs and psychotropic substances, analyse the menace of designer drugs and demonstrate the methods of identifying and purifying narcotics, drugs and psychotropic substances.

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Semester: VI

Instrumental Techniques-Chemical and Biological Paper Code: DSE-(I) 687T (DSE-I)

Course Outcomes	<i>The students taking up this course of B.Sc. with Instrumental Techniques Chemical and Biological (DSE-I) as a special subject of study receive the following outcomes:</i>
CO-1	Explain about the basic concept of separation, and sample extraction from various matrices.
CO-2	Explain sample handling and solvent extraction techniques.
CO-3	Explain the basic principle and working of chromatographic technique that could lead to professional job opportunities in testing and pharmaceutical laboratories.
CO-4	Explain the basic principle and working of mass spectroscopy, electrophoresis technique and centrifugation methods.
CO-5	Explain the enzyme kinetics, protein purification methods, immunological techniques which may facilitate to start small scale start-ups .

Semester: VI

Forensic Physics and Ballistics Paper Code: DSE-(II) 687T (DSE-II)

Course Outcomes	<i>The students taking up this course of B.Sc. with Forensic Physics and Ballistics (DSE-II) as a special subject of study receive the following outcomes:</i>
CO-1	Understand the basic concept of forensic physics and forensic ballistics.
CO-2	Gain the concepts of density, refractive index, birefringence and other optical properties of crystalline material.
CO-3	Know about the different types of firearms and ammunition
CO-4	Understand the concepts of internal, external and terminal ballistics
CO-5	Know the examination of various firearms exhibits including GSR.

A brief note on Bloom's Taxonomy:

According to the revised version of Bloom's Taxonomy there are six levels of cognitive learning. Each level is conceptually different. The six levels are (1) remembering,

(2) understanding, (3) applying, (4) analyzing, (5) evaluating, and (6) creating. We follow the Bloom's Taxonomy in deciding the course outcome & the levels (1/2/3/4/5/6) are displayed in the mapping table of COs with the PSOs of each program of NEP-2020. Details of the terms used in the levels are as follows:

Level-1: **REMEMBER** - this level include:

cite, define, describe, identify, label, list, match, name, outline, quote, recall, report, reproduce, retrieve, show, state, tabulate, and tell.

Level-2: **UNDERSTAND** - this level include:

abstract, arrange, articulate, associate, categorize, clarify, classify, compare, compute, conclude, contrast, defend, diagram, differentiate, discuss, distinguish, estimate, exemplify, explain, extend, extrapolate, generalize, give examples of, illustrate, infer, interpolate, interpret, match, outline, paraphrase, predict, rearrange, reorder, rephrase, represent, restate, summarize, transform, and translate.

Level-3: **APPLY** - this level include:

apply, calculate, carry out, classify, complete, compute, demonstrate, dramatize, employ, examine, execute, experiment, generalize, illustrate, implement, infer, interpret, manipulate, modify, operate, organize, outline, predict, solve, transfer, and use.

Level-4: **ANALYZE** - this level include:

analyze, arrange, break down, categorize, classify, compare, contrast, deconstruct, detect, diagram, differentiate, discriminate, distinguish, divide, explain, identify, integrate, inventory, order, organize, relate, separate, and structure.

Level-5: **EVALUATE** - this level include:

appraise, apprise, argue, assess, compare, conclude, consider, contrast, convince, criticize, critique, decide, determine, discriminate, evaluate, grade, judge, justify, measure, rank, rate, recommend, review, score, select, standardize, support, test, and validate.

Level-6: (highest level): **CREATE** - this level include:

arrange, assemble, build, collect, combine, compile, compose, constitute, construct, create, design, develop, devise, formulate, generate, hypothesize, integrate, invent, make, manage, modify, organize, perform, plan, prepare, produce, propose, rearrange, reconstruct, reorganize, revise, rewrite, specify, synthesize, and write.

Department of Forensic-Science

Programme: B.Sc.(Honours)Forensic Science

Mapping of COs with PSOs for Semester-I

Course		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
Paper Title: Introduction to Forensic Science & Criminalistics Paper Code: MJS- 187	CO1		2								
	CO2			3							
	CO3				4						
	CO4					5					
	CO5						6			9	

Mapping of COs with PSOs for Semester-I

Paper Title: Introduction to Forensic Science Paper Code: MNS- 188	CO1		2								
	CO2			3							
	CO3				4						
	CO4					5					
	CO5						6				

Mapping of COs with PSOs for Semester-I

Paper Title: Crime Scene Management Paper Code: GES- 187	CO1	1	2	3							
	CO2				4						
	CO3				4						
	CO4					5					
	CO5					5	6				

Mapping of COs and PSOs for Semester-II

Paper Title: Criminology and Criminal Justice System Paper Code: MJS- 287	CO1	1	2								
	CO2		2								
	CO3			3	4						
	CO4					5					
	CO5					5					

Mapping of COs and PSOs for Semester-II

Paper Title: Forensic Chemistry and Toxicology Paper Code: MNS- 288	CO1	1	2								
	CO2			3							
	CO3				4	5					
	CO4					5					

Mapping of COs and PSOs for Semester-II

Paper Title: Forensic Dermatoglyphics & Biometrics Paper Code: GES- 287	CO1	1	2								
	CO2			3	4						
	CO3				4						
	CO4				4	5					
	CO5						6				

Department of Forensic-Science

Mapping of COs and PSOs for Semester-III

Course		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
Paper Title: Questioned Documents & Computer Forensic Paper Code: MJS-387	CO1		2								
	CO2			3							
	CO3				4						
	CO4		2								
	CO5			3							

Mapping of COs and PSOs for Semester-III

Paper Title: Fingerprints, Biometrics & Anthropometry Paper Code: MNS-388	CO1		2								
	CO2			3							
	CO3		2		4						
	CO4				4						
	CO5				4		6				

Mapping of COs and PSOs for Semester-III

Paper Title: Cyber Forensic Paper Code: GES-387	CO1		2								
	CO2		2		4						
	CO3			3							
	CO4				4						
	CO5	1		3							

Mapping of COs and PSOs for Semester-III

Paper Title: Handwriting Identification and Recognition Paper Code: Voc/SEC- XXX	CO1	1									
	CO2		2								
	CO3					5					
	CO4			3							
	CO5	1				5					

Mapping of COs and PSOs for Semester-IV

Paper Title: Fingerprints, Biometrics & Anthropometry Paper Code: MJS-487	CO1		2								
	CO2		2		4						
	CO3			3							
	CO4				4						
	CO5						6				

Mapping of COs and PSOs for Semester-IV

Paper Title: Basic Instrumental Techniques in Forensic Science Paper Code: MNS-488	CO1	1		3							
	CO2	1	2								
	CO3	1			4						
	CO4										
	CO5						6				

Department of Forensic-Science

Mapping of COs and PSOs for Semester-IV

Course		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
<i>Paper Title: Fraud Detection in Documents & Fingerprint</i> <i>Paper Code: GES-487</i>	CO1	1	2								
	CO2		2								
	CO3			3	4						
	CO4				4	5					
	CO5						6				

Mapping of COs and PSOs for Semester-IV

<i>Paper Title: Tools & Techniques in Criminal Investigation</i> <i>Paper Code: Voc /SEC-XXX</i>	CO1	1									
	CO2		2								
	CO3			3	4						
	CO4				4	5					
	CO5						6				

Mapping of COs and PSOs for Semester-V

<i>Paper Title: Forensic Biology and Serology</i> <i>Paper Code: MJS-587T</i>	CO1	1									
	CO2		2								
	CO3			3							
	CO4							7			
	CO5		2						8		

Mapping of COs and PSOs for Semester-V

<i>Paper Title: Instrumental Techniques-Physical</i> <i>Paper Code: DSE-587T</i>	CO1	1									
	CO2		2								
	CO3										10
	CO4								9		
	CO5	1									

Mapping of COs and PSOs for Semester-V

<i>Paper Title: Forensic Medicine and Drugs of Abuse</i> <i>Paper Code: SEC-587T)</i> <i>(SEC/Vocational)</i>	CO1	1									
	CO2								9		
	CO3			3							
	CO4				4						
	CO5										10

Department of Forensic-Science

Mapping of COs and PSOs for Semester-VI

Course		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
<i>Paper Title: Forensic Chemistry and Toxicology</i> Paper Code: MJS-687T	CO1	1									
	CO2			3							
	CO3								8		
	CO4		2								

Mapping of COs and PSOs for Semester-VI

Course		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
<i>Paper Title: Instrumental Techniques-Chemical and Biological</i> Paper Code: DSE-(I) 687T	CO1			3							
	CO2		2								
	CO3										10
	CO4		2								
	CO5										10

Mapping of COs and PSOs for Semester-VI

Course		PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	PSO9	PSO10
<i>Paper Title: Forensic Physics and Ballistics</i> Paper Code: DSE-(II) 687T	CO1	1									
	CO2	1									
	CO3			3							
	CO4	1						7			
	CO5			3							



(IQAC Coordinator)





(Convenor, Academic Committee)

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(Dr. Pragyesh Kumar Agrawal)
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