Bachelor of Science Honors (Forensic Science)

Program Outcomes (POs)

At the end of the program, students will be able to:	
PO 01	Inculcate and nurture scientific thinking in various aspects of professional and personal life.
PO 02	Translate the concepts learnt to find creative and innovative solutions to real life problems of the society and industry through inter and trans-disciplinary approach.
PO 03	Critically analyze the information pertaining to the field of forensic science.
PO 04	Develop into socially responsible individuals and contribute effectively towards nation building.
PO 05	Illustrate sound principles of ethics in various aspects of professional and personal life as a forensic scientist.
PO 06	Demonstrate effective written and oral communication and leadership skills.
PO 07	Develop into environmentally aware individuals with a mindset towards sustainability and eco-friendly solutions for regional, national and global concerns.
PO 08	Exhibit up to date knowledge and competencies that meet the global expectations in the field of forensic science.

Program Specific Outcomes (PSOs)

At the end of the program, students will be able to:	
PSO 01	Effectively use various principles of forensic science to investigate and validate protocols without cognitive biases and following ethical practices.
PSO 02	Demonstrate competency to chalk out the investigative procedures in a systematic manner and the role of allied law enforcement agencies and techniques involved in forensic investigation
PSO 03	Appraise various methods/protocols, instrumentation of value in the investigative process following the use of appropriate ethical and validation protocols.
PSO 04	Formulate expert opinion, investigation protocols aimed at solving cases and report the same.

Course Outcomes (COs)

2019-20 Batch

Semester	Course Code	Course Name	Course Outcomes (COs)
I	16ENG1L02	ENGLISH I	**CO1**: Demonstrate a coherent and systematic knowledge of the field of English literature showing an understanding of current theoretical and literary developments in relation to the specific field of English studies. **CO2**: Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity. **CO3**: Display knowledge to cultivate a better understanding of values – both literary values that aid us in literary judgment and also values of life at all stages; apply appropriate methodologies for the development of the creative and analytical faculties of students, their overall development of writing, including imaginative writing. **CO4**: Cultivate ability to look at and evaluate literary texts as a field of study and as part of the wider network of local and global culture.
	17BSFH1C01	GENERAL FORENSIC SCIENCE	**CO1**: Memorize the History of forensic science in India and abroad, divisions, RFSL, CFSL and their role in criminal investigation. **CO2**: Recognize Various criminal detective agencies, their power, establishment, and their role in forensic development & criminal justice system. **CO3**: Classify various central investigation agencies, central forensic institute and their role in criminal investigation. **CO4**: Distinguish various forensic science disciplines, evidences and also able to distinguish different types of courts in India **CO5**: Create the report on the basis of case studies.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH1C02	FORENSIC PHYSICS	**CO1**: Describe various physical evidences and its composition **CO2**: Employ various scientific techniques for the analysis of evidences and interpretation of the results **CO3**: Illustrate the concept of scientific instruments for the analyses of evidences **CO4**: Compare the characteristics of physical evidences **CO5**: Assess the best technique for the examination of physical evidences
	17BSFH1C03	FORENSIC CHEMISTRY	**CO1**: Define arson, organic chemistry, trace evidence **CO2**: Classify Aromatic, Aliphatic compounds, drugs of abuse in sports, narcotic drugs and designer drugs **CO3**: Examine alcoholic beverages, drugs, anions, cations, fertilizers, pesticides, oil and fats **CO4**: Summarize IUPAC nomenclature of alkanes, alkenes, halo alkanes, alcohol, ether, aldehydes, ketones, carboxylic acid, nitro compounds, aromatic compounds, Drugs and Cosmetic Act, Excise Act and NDPS Act. **CO5**: Explain the instrumental techniques used for Qualitative and Quantitative analysis of organic and inorganic compounds. **CO6**: Discuss various explosives and characteristics of explosives and approach to scientific officers to scene of explosion
	17BSFH1C04	INTRODUCTION TO FORENSIC BIOLOGY	**CO1**: Demonstrate the knowledge and basics of the normal disposition; inter relationships, gross, functional and applied anatomy of various structures of the human body. **CO2**: Identify the various microscopic structures of different tissues and organs in the human body and correlate the same with its respective functions. **CO3**: Demonstrate anatomical knowledge towards finding solutions to deeper forensic questions pertaining to death, wounds and identifying a human from its remains. **CO4**: Compare research and locate the site of gross lesions/wounds according to the deficits encountered based on the observations drawn on the human body at the crime scene.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH1C02L	FORENSIC PHYSICS LAB	**CO1**: Explain the safety precautions, identify various instruments and classify various samples in a laboratory **CO2**: Identify various layers on a paint chip **CO3**: Use scientific technique to determine the specific gravity of physical evidences such as glass and soil **CO4**: Employ scientific instrument to find the RI of glass and physically match the glass fragments and interpret the result **CO5**: Differentiate and examine the various components in paint sample using TLC
	17BSFH1C03L	FORENSIC CHEMISTRY LAB	**CO1**: Discuss Safety precautions and characteristics of gasoline, kerosene, and diesel oil. **CO2**: Test for cations and anions, phenolphthalein in trap cases and common drugs of abuse. **CO3**: Identifying Melting point and boiling point. **CO4**: Experiment for TLC separation of anabolic steroids.
	17BSFH1C04L	INTRODUCTION TO FORENSIC BIOLOGY LAB	**CO1**: Examine the various uses of microscope and its uses in mitosis. **CO2**: Assess various types of blood cell and their count along with the study and visualization and identification of bones and blood type. **CO3**: Assess the function and identification of bar bodies. **CO4**: Assess the detection of proteins and amylase activity by examining saliva and the various functions of systems of body.
	17BSFH1S51	SKILL ENHANCEMENT COURSE: FORENSIC ACCOUNTING AUDITING	**CO1**: Recall the basic principles of accounting, auditing, types of economic crimes; theories and types of frauds, money laundering and tools used in forensic accounting. **CO2**: Describe the objectives of accounting and accounting statements; role of an auditor, concept of internal standards. **CO3**: Interpret various case studies of forensic accounting with respect to the type of fraud or economic offense. **CO4**: Demonstrate the significance of data analysis tools in forensic accounting.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH1S52	SKILL ENHANCEMENT COURSE: POLICE ADMINISTRATION	**CO1**: Describe policing in ancient times, methods and roles and responsibilities divided according to their designation **CO2**: Articulate the modern security system and organization of private and government agencies and different techniques of security in different periods. **CO3**: Interpret the use of various security documents maintained by security personnel along with classification of documents according to security reason. **CO4**: Demonstrate how various methods of security deployed to control and prevent crimes in different establishments like industries, hospital, school, including personal securities in modern world. **CO5**: Criticize the preventive measures used to control different crimes and improving security and vigilance and liaison with different agencies.
II	16ENG1L02	ENGLISH I	**CO1**: Demonstrate a coherent and systematic knowledge of the field of English literature showing an understanding of current theoretical and literary developments in relation to the specific field of English studies. **CO2**: Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity. **CO3**: Display knowledge to cultivate a better understanding of values – both literary values that aid us in literary judgment and also values of life at all stages; apply appropriate methodologies for the development of the creative and analytical faculties of students, their overall development of writing, including imaginative writing. **CO4**: Cultivate ability to look at and evaluate literary texts as a field of study and as part of the wider network of local and global culture.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH2C01	INTRODUCTION TO PSYCHOLOGY	**CO1**: Define meaning, goals of psychology, schools of psychology and perspectives of psychology. **CO2**: Demonstrate relationship between psychology, deviant behavior and the theories of deviant behavior. **CO3**: Differentiate between various research methods of data collection in psychology. **CO4**: Discuss different basic psychological processes such as sensation, perception, and memory. **CO5**: Assess various types of personality, personality theories and theories of punishments.
	17BSFH2C02	BASICS OF COMPUTER SCIENCE	**CO1**: Recall the general features, applications and the organization of a computer system. **CO2**: Explain the working of computer hardware and software and the various elements in operating systems involved. **CO3**: Illustrate the concept of computer security and importance of anti-virus protection. **CO4**: Differentiate all types of networks, internet and intranet and various internet applications. **CO5**: Select various computer applications in support to the analytical processes.
	17BSFH2C03	CRIME SCENE MANAGEMENT	**CO1**: Define crime, crime scene documentation, importance of agencies involved in crime scene investigation. **CO2**: Describe types of crime scene, steps of crime scene documentation such as note-making, photography, videography and crime scene sketching. **CO3**: Differentiate between different types of crime scene searching methods with the help of simulated crime scene. **CO4**: Recommend methods for collection, preservation, packaging and examination of physical evidence like hair, glass, blood, soil etc. **CO5**: Formulate strategies for crime scene reconstruction with appropriate measures.

Semester	Course Code	Course Name	Course Outcomes (COs)
	19BSFH2C04	TRACE EVIDENCE	**CO1**: Define physical properties of various materials. **CO2**: Articulate the importance of various trace evidence that can be used in the investigation of a crime. **CO3**: Employ various techniques in collection, packaging and preservation of the evidence (glass, soil, hair and fiber). **CO4**: Examine the strength of preliminary examination of trace evidence such as glass, soil, hair and fiber. **CO5**: Prioritize on the instrumental techniques of trace evidence using statistical tools.
	17BSFH2C01L	INTRODUCTION TO PSYCHOLOGY LAB	**CO1**: Examine the human personality type and behavioral traits. **CO2**: Assess various problems encountered by students in college and by society. **CO3**: Appraise the intelligence level of the student through different tools. **CO4**: Assess the attachment level with parents and learning level.
	17BSFH2C02L	BASICS OF COMPUTER SCIENCE LAB	**CO1**: Identify various tasks that can be carried out on documents and folders **CO2**: Employ various features on the taskbar and right-click of the Windows O.S. **CO3**: Demonstrate the use of watermark in a document **CO4**: Differentiate the various features in a document **CO5**: Decide on numerous functions and formulas on a spreadsheet to produce a particular result
	17BSFH2C03L	CRIME SCENE MANAGEMENT LAB	**CO1**: Apply crime scene investigative technique for simulated scene of crime (Indoor/ Outdoor) **CO2**: Demonstrate Investigative technique for simulated scene of vehicle crime/ road traffic accident **CO3**: Examine, collect, package, seal and label both physical and biological evidence found in simulated scene of crime **CO4**: Report writing about local crime scene unit

Semester	Course Code	Course Name	Course Outcomes (COs)
	19BSFH2C04L	TRACE EVIDENCE LAB	**CO1**: Articulate the importance of collection, packaging and preservation of trace evidence. **CO2**: Illustrate the importance of microscopic examination of trace evidence. **CO3**: Examine the significance of preliminary examination of the evidence by chemical methods. **CO4**: Assess the technique of identifying and analyzing trace evidence from the simulated cases.
III	17BSFH3C01	QUESTIONED DOCUMENT EXAMINATION	**CO1**: Define documents, Questioned documents, exemplars, handwriting, disguise, forgery, secret writing, alterations, special documents, inks, security documents, stamps and seals etc. **CO2**: Explain the roles, duties and qualification of a document expert as well as the factors influences handwriting **CO3**: Examine documents, papers, forgery, disguise, alterations, inks, impressions, printers and typewriters. **CO4**: Examine fraudulent documents, handwritings, signatures, mechanical impressions, sequence of stroke, security documents and special documents **CO5**: Create the report on the basis of comparison
	17BSFH3C03	CRIMINOLOGY AND CRIMINAL JUSTICE SYSTEM	**CO1**: Describe the meaning of crime, process and various theories of crimes. **CO2**: Interpret the significance of CJS and its role in prevention of occurrence of crime. **CO3**: Appraise the role of LEA and judiciary in maintaining peace and order in the country. **CO4**: Describe the historical development, types of prisons, classification of prisoners and UN standard rules for treatment of prisoners.
	17BSFH3C01L	QUESTIONED DOCUMENT EXAMINATION LAB	**CO1**: Examination of handwriting and signature samples; disguised writing **CO2**: Examination of ink using TLC and deciphering secret and miniature writing **CO3**: Examination of security features of currency notes and Indian passport using VSC. **CO4**: Analysis of sequence of stroke **CO5**: Preservation of charred documents using PVA

Semester	Course Code	Course Name	Course Outcomes (COs)
	19BSFH3C04	FORENSIC PHOTOGRAPHY	**CO1**: Define photography & camera, it's different parts & types. **CO2**: Describe about different types of lenses, basic principles & Light involvement in photography. **CO3**: Identify various settings in the camera, characteristics of the lens and lens system. **CO4**: Demonstrate Exposure triangle & Photomicrography/ Microphotography & explain different light sources used in photography. **CO5**: Differentiate various types of photography & it's introduction and working. **CO6**: Explain Crime scene photography, it's steps & discuss admissibility of digital images in court.
	19BSFH3C04L	FORENSIC PHOTOGRAPHY LAB	**CO1**: Describe the different parts of various camera, lighting techniques and exposure techniques **CO2**: Employ various different ISO Settings in camera and interpret the results **CO3**: Differentiate Photomicrography & Describe Photography of wounds. **CO4**: Difference in digital photo file formats- raw and jpeg & Demonstrate Image Authentication using hashing.
	19NENVI0VE2 #	ABILITY ENHANCEMENT COURSE ENVIRONMENTAL SCIENCE	**CO1**: Understanding of the basic concepts of environment and ecology to be aware of the surroundings at individual, local and global levels. **CO2**: Comprehending the usage of physical and biological resources available in nature; the issues that affect these resources and what one can do to sustain them. **CO3**: Appreciate key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions. **CO4**: Demonstrate an integrative approach to environmental issues with a focus on sustainability

Semester	Course Code	Course Name	Course Outcomes (COs)
	17CHE0G3	GENERIC ELECTIVE: CLINICAL BIOCHEMISTRY	**CO1**: Demonstrate relationship of energy flow and energy coupling with ATP production in living systems and exemplify the utilization of various biomolecules to harvest energy **CO2**: Explain compartmentalization of the metabolic pathways namely carbohydrate and amino acids and relate the same with diseases due to errors in metabolic process **CO3**: Discuss the requisites of a clinical laboratory and infer the recommendations of quality assurance **CO4**: Examine the components of body fluids like blood, semen and urine and dissect the means of identification at a suspected site **CO5**: Interpret the patient's (victim's) clinical laboratory profile that may help to investigate the crime efficiently.
	16MAN0G7	GENERIC ELECTIVE: HUMAN RESOURCE MANAGEMENT	**CO1**: Demonstrate an understanding of key terms, theories/concepts and practices within the field of HRM. **CO2**: Provide innovative solutions to problems in the fields of HRM and be able to identify and appreciate the significance of the ethical issues in HR. **CO3**: Demonstrate competence in communicating and exchanging ideas in a group context. **CO4**: Work effectively with colleagues with diverse skills, experience levels and way of thinking. **CO5**: Evaluate HRM related social, cultural, ethical and environmental responsibilities and issues in a global context. **CO6**: To integrate the knowledge of HR practices Related monetary benefits to avail within the organization.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17CHE0G3L	GENERIC ELECTIVE: CLINICAL BIOCHEMISTRY LAB	**CO1**: Describe the blood/urine specimen collection and storage conditions in the clinical laboratory **CO2**: Examine qualitatively, the normal and abnormal constituents of urine sample and assess the disease condition of the patient **CO3**: Test the urine sample (quantitative) and report the conditions of the human body based on the levels of biochemical constituents present **CO4**: Test the blood sample and report the conditions of the human body based on the levels of normal (urea, creatinine) and abnormal constituents (glucose, proteins etc.).
	19BSFH3S61	SKILL ENHANCEMENT COURSE: INTRODUCTION TO SECURITY AND VIGILANCE	**CO1**: Describe security and vigilance in ancient times, methods and roles and responsibilities divided according to their designation **CO2**: Articulate the modern security system and organization of private and government agencies and different techniques of security in different periods. **CO3**: Interpret the use of various security documents maintained by security personnel along with classification of documents according to security reasons. **CO4**: Demonstrate how various methods of security are deployed to control and prevent crimes in different establishments like industries, hospitals, school, including personal securities in the modern world. **CO5**: Criticize the preventive measures used to control different crimes and improve security and vigilance and liaison with different agencies.
	19BSFH3S62	SKILL ENHANCEMENT COURSE: VICTIMOLOGY	**CO1**: Describe the meaning, historical development of Victimology, key concepts, dynamics and patterns of victimization. **CO2**: Critically analyze the various patterns and trends in victimization and role of citizens towards preventing victimization. **CO3**: Critically analyze the national and international victim assistance agencies and government policies for the victims and various initiatives by the government towards curbing victimization. **CO4**: Propose better policies, laws and measures that prevent victimization in the society.

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IV	17BSFH4C01	FORENSIC COMPUTING	**CO1**: Define Components of Computer Organization and Role of Motherboard. **CO2**: Articulate on Boot sequence, Role of Storage Media, Number System, Application and System software (Operating systems: MAC, Windows and LINUX). **CO3**: Identify various file systems and aspects of memory distribution on the hard disk or memory device **CO4**: Describe the various malicious codes and its effects, cryptography, steganography and their working principle. **CO5**: Compare various types of networking, Reference models, Aspects of internet, web browsers and parts of the memory devices.
	17BSFH4C02	INSTRUMENTATION	**CO1**: Explain the principle and working of various instrumental techniques and recognize its forensic significance **CO2**: Illustrate the sample preparation for various analytical techniques and interpret the data obtained post analysis **CO3**: Differentiate between types of chromatography, spectrophotometer and electrophoretic techniques. **CO4**: Recommend a suitable instrumental technique based on the nature of sample to be analyzed
	17BSFH4C03	FORENSIC TOXICOLOGY	**CO1**: List the different terms, principles and concepts related to toxicology, pharmacokinetics, instrumentation, medico-legal and post mortem examination report. **CO2**: Classify and describe different types of poisons, mode of action, LADME (Liberation, Absorption, Distribution, Metabolism and Excretion), chemical warfare agents **CO3**: Interpret Poison Act 1919 and NDPS Act 1985 **CO4**: Examine drugs by Spot test, Color test, Microcrystalline test, Chromatographic and spectrophotometric methods **CO5**: Recommend appropriate extraction and isolation methods for poison and drug depending on their nature

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH4C04	FINGERPRINT AND IMPRESSIONS	**CO1**: Identify the best method of visualization and development of impression evidence on different surfaces types. **CO2**: Employ various photographic and lighting techniques to examine Impression evidences **CO3**: Compare the class and individual characteristics of impression evidences like: fingerprints, lip prints, footprints, tyre prints etc. **CO4**: Criticize the various crime scene visualization, lifting, casting and preservation techniques of impression evidences **CO5**: Create the report on the basis of comparison
	17BSFH4C01 L	FORENSIC COMPUTING LAB	**CO1**: Recall the parts of Computer system with dismantling and rebuilding. **CO2**: Demonstrate the technique of working with BIOS and Windows. **CO3**: To Learn the File Signature, Web history and Cache. **CO4**: To gain knowledge about creating and detecting Steganography. **CO5**: To understand Networks of computer systems
	17BSFH4C03 L	FORENSIC TOXICOLOGY LAB	**CO1**: Identify the proper collection, preservation and packaging methods for toxicological samples **CO2**: Assess organic poison, metallic poison and alcohol using color, spot and microcrystalline tests to study the chemical property of the sample. **CO3**: Examine toxicological sample using TLC in order to separate and identify from matrix mixture. **CO4**: Report on analysis of toxicological sample **CO5**: Demonstrate the working of UV-visible spectrophotometer for the analysis of chemical sample to perform the characterization of the sample.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH4C04L	FINGERPRINT AND IMPRESSIONS LAB	**CO1**: Collection of plain and rolled fingerprints and identification of patterns of fingerprints **CO2**: Classification of fingerprints, lip prints and foot prints **CO3**: Choose the best method and development of latent fingerprints, lip prints and foot prints using various powder and chemical methods **CO4**: Examine fingerprints and perform Ridge counting, Ridge tracing etc. **CO5**: Compare class and individual characteristics and conclude by forming a report
	19MIC0VE1	ABILITY ENHANCEMENT COURSE: INDIAN CONSTITUTION	**CO1**: Recognize the meaning of constitution and the development of constituent assembly, the features of the constitution and the fundamental rights, duties and directive principles of state policy. **CO2**: Name the union and state legislature and executive, their powers and functions. **CO3**: Demonstrate the Judicial system in India. **CO4**: Appraise various concepts such as the judicial review, writs, judicial activism, public interest litigation and Lok Adalat. **CO5**: Question the reservation system in India and make suggestions to the government to implement appropriate laws and policies for the development of backward classes and women and children in India. Defend Indian federalism, secularism and the national human rights commission.
	17COM0G7	INTRODUCTION TO ELEMENTS OF ENTREPRENEURSHIP	**CO1**: Outline the function of the entrepreneur in the successful, commercial application of innovations and recall the different opportunities and successful growth stories. **CO2**: Learn how to start an enterprise and design business plans that are suitable for funding by considering all dimensions of business. **CO3**: Prioritize personal attributes that enable best use of entrepreneurial opportunities. **CO4**: Examine Economic conditions with higher level knowledge and understanding of contemporary trends in e-commerce and business finance. **CO5**: Explore entrepreneurial leadership and management style.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17CS0G8	INTERNET AND HTML	**CO1**: Explain the functions of each layer in OSI and TCP/IP models **CO2**: Identify the different transmission media and analyze the types of topologies used in networks for communication C03: Discuss addressing scheme used in networks. **CO4**: Design a responsive web site using HTML5 tags and style the web page using CSS tags **CO5**: Learning JavaScript programming concepts and to create interactive web pages
	17CS0G8L	INTERNET AND HTML LAB	**CO1**: To Design a web page to demonstrate all HTML tags and creating forms to establish communication with web server **CO2**: Design a web page to demonstrate ordered lists, unordered lists and Frames **CO3**: Implementation of internal and External CSS **CO4**: Create and Implement the programs using CSS to set background property, borders and margins using external CSS **CO5**: Design and implement programs using JavaScript to validate the student details and to change the background color of the Web page, upon mouse entry and mouse exit.
V	17BSFH5C01	FORENSIC BALLISTICS	**CO1**: Explain various provisions of Indian Arms Act in cases involving the use of firearms or ammunition. **CO2**: Discuss various concepts of primitive and modern firearms, improvised/country-made weapons and ammunition. **CO3**: Appraise the factors affecting the ballistics of projectile **CO4**: Assess evidences related to forensic ballistics **CO5**: Infer challenges faced by forensic ballistics expert

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH5C02	RESEARCH METHODOLOGY	**CO1**: Define research, research process, research design, scientific research, hypothesis, descriptive and inferential statistics. **CO2**: Describe types of research, steps in carrying out research, basic principles of experimental research designs, ideal sample, methods of sampling, data collection, and statistical tools. **CO3**: Demonstrate competency to layout the various steps in research scenarios, design research, structure a proposal, define a research problem, assess quality control, collect data and represent it in the most appropriate format. **CO4**: Distinguish between types of research, methods & methodology of research, sampling techniques, data collection, and various statistical tools. **CO5**: Formulate and carry out research following the nuances of research methodology and statistics
	17BSFH5C01L	FORENSIC BALLISTICS LAB	**CO1**: Recall the factors affecting formation of striation and impressions on the bullets and cartridge cases. **CO2**: Articulate the working of various instruments deployed in ballistics laboratory for analysis of bullets and cartridge cases. **CO3**: Demonstrate the technique of examination and comparison of bullets and cartridge. **CO4**: Employ techniques for collection and packing of evidences such as Gunshot Residue using swab.
	17BSFH5D31	DISCIPLINE SPECIFIC ELECTIVE: DIGITAL FORENSICS	**CO1**: Assess and theorize the characteristics and classification of cyber-crime and its types, digital evidence. **CO2**: Compare and distinguish between different cyber-crimes and password attacks. **CO3**: Articulate different features that can be used as digital evidence. **CO4**: Understand and compare different types of reports used in investigation and court of law. **CO5**: Summarize the importance of lab, its requirements and preparation.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH5D32	DISCIPLINE SPECIFIC ELECTIVE: ADVANCED FORENSIC BIOLOGY	**CO1**: Propose solution for paternity and maternity dispute cases by analyzing genetic profile. **CO2**: Employ various techniques to analyze serological evidence. **CO3**: Recommend appropriate methodology for the examination and analysis of body fluids. **CO4**: Propose most relevant instrumental techniques for the analysis of body fluids.
	17BSFH5D31L	DISCIPLINE SPECIFIC ELECTIVE: DIGITAL FORENSICS LAB	**CO1**: Recall the safety precautions in cyber-crime scenes **CO2**: Describe and apply different tools like FTK, cyber check suite etc., **CO3**: Summarize the importance and application of how to write protect a system. **CO4**: Write a report after the completion of analysis.
	17BSFH5D32L	DISCIPLINE SPECIFIC ELECTIVE: ADVANCED FORENSIC BIOLOGY LAB	**CO1**: Summarize concepts of serology and body fluids such as blood, saliva, semen etc. **CO2**: Employ various tests available for preliminary and confirmatory examination of serological evidences **CO3**: Compare various biochemical techniques for appropriate identification of body fluids. **CO4**: Propose most suitable analysis for a particular biological evidence.
	17BSFH5D41	DISCIPLINE SPECIFIC ELECTIVE: IMAGE PROCESSING AND SPEAKER IDENTIFICATION	**CO1**: Recall the fundamental concepts of image & video processing **CO2**: Explain how digital images are represented & manipulated in computer, including reading & writing from storage **CO3**: Explain speech production & forensic aspects of phonetics and its involvement in court **CO4**: Employ the various tools & techniques for the audio analysis & speaker identifications **CO5**: Distinguish the techniques for the image and audio enhancement, restoration & interpretation

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH5D42	DISCIPLINE SPECIFIC ELECTIVE: WILDLIFE FORENSICS AND ENTOMOLOGY	**CO1**: Explain various provisions of Wildlife Protection Act in cases involving the use of illegal Wildlife products. **CO2**: Discuss various concepts of wildlife conservation, trade and permitted procedures. **CO3**: Appraise the factors of regulation of CITES affecting the use and trade of items. **CO4**: Assess evidence related to wildlife products. **CO5**: Appraise the factors of forensic entomology and its uses.
	17BSFH5D41L	DISCIPLINE SPECIFIC ELECTIVE: IMAGE PROCESSING AND SPEAKER IDENTIFICATION LAB	**CO1**: Describe various components if digital image **CO2**: Explain a knowledge about recording and analyzing the speech samples **CO3**: Demonstrate the techniques for digital image and audio enhancement & authentication **CO4**: Examine image, audio and video files using various forensic software
	17BSFH5D42L	DISCIPLINE SPECIFIC ELECTIVE: WILDLIFE FORENSICS AND ENTOMOLOGY LAB	**CO1**: Recall the factors to differentiate between original and fake products. **CO2**: Articulate the working of CITES and Wildlife Protection Act in classifying products as permissible or illegal. **CO3**: Demonstrate the technique of examination and comparison of pugmarks. **CO4**: Employ techniques for collection and packing of evidences such as skin and ivory.
	19ENG0G4	GENERIC ELECTIVE: WRITING FOR RESEARCH	**CO1**: Enabling students to demonstrate critical thinking, to analyze, synthesize and document credible source material. **CO2**: To examine and reflect on language forms, features, structures of texts and the demands of particular learning contexts. **CO3**: Forming a firm academic base for exploration of texts and contexts that students encounter during the undergraduate and post-graduate level. **CO4**: Orientation towards various nuances of research.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17PSY0G6	GENERIC ELECTIVE: COUNSELLING AND GUIDANCE	**CO1**: Describe the meaning of counselling, features, history, goals and areas in which counsellor work. **CO2**: Recognize the traits, communication skills essential for an effective counselling process. **CO3**: Differentiate between Freudian psychodynamic therapy and Neo-Freudian psychotherapy. **CO4**: To critically analyze various psychotherapy of counselling
	17BSFH5S51	SKILL ENHANCEMENT COURSE: ARSON AND EXPLOSIVES	**CO1**: Classify and explain the types of explosives with respect to synthesis, its thermo-chemistry and examination techniques. **CO2**: Identify the behavior of fire and various aspects of protection systems with respect to fire incidents. **CO3**: Interpret and locate the source of fire and collect evidences from fire scene for analysis. **CO4**: Summarize and report the behavior of fire and explosives for solving such crimes. **CO5**: Assess fire, arson and explosion crime scene to recommend suggestions towards concluding the cases based on the evidence collected.
	17BSFH5S52	SKILL ENHANCEMENT COURSE: FORENSIC PSYCHOLOGY	**CO1**: Examine the human personality type and behavioral traits. **CO2**: Assess various problems encountered by students with respect to health and guidance needs. **CO3**: Appraise the self-concept of the student through an assessment tool. **CO4**: Assess the satisfaction and aggression level among students.
	17BSFH5S51L	SKILL ENHANCEMENT COURSE: ARSON AND EXPLOSIVES LAB	**CO1**: Identify the proper collection, preservation and packaging methods for explosive and fire scene evidences **CO2**: Assess Nitrate explosives, accelerants and black powder using color tests and flame tests. **CO3**: Examine explosive residues using TLC to separate and identify from sample matrix **CO4**: Report on analysis of explosive and fire debris samples. **CO5**: Demonstrate the determination of flash point and smoke point of accelerants.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH5S52L	SKILL ENHANCEMENT COURSE: FORENSIC PSYCHOLOGY LAB	**CO1**: Examine the human personality type and behavioral traits. **CO2**: Assess various problems encountered by students with respect to health and guidance needs. **CO3**: Appraise the self-concept of the student through an assessment tool. **CO4**: Assess the satisfaction and aggression level among students.
VI	17BSFH6C01	CYBER CRIME AND CYBER LAW	**CO1**: Describe cybercrime and its classification based on how it differs from conventional crimes. **CO2**: Explain different types of cybercrimes, their classification and mode of commission where individuals are targeted. **CO3**: Identify various security threats posed by phishing & spoofing on an individual and child pornography & cyber terrorism on society as a whole. **CO4**: Get an outline on the breadth of ITAA, punishments based on classification of cybercrime and provisions given for certifying authority.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH6C02	FORENSIC ANTHROPOLOGY AND ODONTOLOGY	**CO1**: Define, describe and recall forensic anthropology, osteology& its terminologies, ossification, role of forensic anthropology in research and role of forensic anthropologist, forensic odontology & its terminologies, role of forensic odontology in mass disaster, dental autopsy and role of forensic odontologist in human identification. **CO2**: Classification of bones, anatomy of different bones, composition and function of bones. **CO3**: Demonstrate development of bone, prenatal and post- natal, membranous and cartilaginous development, dentition pattern, classification of teeth, anatomy of tooth, development of tooth, development & classification of dental caries. **CO4**: Choose, demonstrate, employ and use basic tools and techniques for biological profiling of skeletal remains through sex, stature and age estimation, and field and laboratory management of skeletal and dental remains. **CO5**: Compare and contrast the facial features and anatomy of human skull and create 2-D and 3-D cranio-facial reconstruction through still photographic method and computerized technique of superimposition, dental anomalies and demonstrate age estimation through dental remains
	17BSFH6C03	FORENSIC MEDICINE	**CO1**: Explain various provisions of Forensic medicine and medical jurisprudence in the living and dead. **CO2**: Discuss various concepts of ante mortem and postmortem characteristics. **CO3**: Appraise the factors of infanticide, drowning and asphyxial deaths. **CO4**: Assess evidences related to internal and external examination of dead bodies for investigation.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH6C02L	FORENSIC ANTHROPOLOGY AND ODONTOLOGY LAB	**CO1**: Describe the bone specimen identification, collection and storage conditions in the forensic anthropology laboratory **CO2**: Demonstrate the techniques somatoscopy and somatometry for the identification of living humans **CO3**: Performing craniometry and osteometry to examine the various skeletal remains. **CO4**: Develop competency to assess sex of skull, mandible & pelvis and age of the skull sutures.
	17BSFH6D41	DISCIPLINE SPECIFIC ELECTIVE: MOBILE AND NETWORK FORENSICS	**CO1**: Articulate, discuss and identify various basic concepts of mobile forensics like SIM and its structure, operating systems like android, blackberry etc., **CO2**: Interpret various features of different operating systems, networks and firewalls. **CO3**: Examination of different types of networks for any intrusion. **CO4**: Identification of various features supporting intrusion and crime committed.
	17BSFH6D42	DISCIPLINE SPECIFIC ELECTIVE: DNA TYPING	**CO1**: Discuss the molecular biology of DNA, principles of human genetics along with the applications of bioinformatics, genomics and proteomics in forensic science. **CO2**: Differentiate between various DNA typing techniques. **CO3**: Summarize effect of complicating factors in interpretation of DNA profile. **CO4**: Employ statistics for evaluation of DNA profiles and population data. **CO5**: Appraise the forensic application and method for collection, preservation and analysis of physical evidence for DNA Typing.
	17BSFH6D41L	DISCIPLINE SPECIFIC ELECTIVE: MOBILE AND NETWORK FORENSICS LAB	**CO1**: Apply different tools like wireshark, MobileEdit **CO2**: Describe the importance and application of different network commands. **CO3**: Analyze firewall logs. **CO4**: Write a report after the completion of analysis

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH6D42L	DISCIPLINE SPECIFIC ELECTIVE: DNA TYPING LAB	**CO1**: Articulate DNA laboratory management **CO2**: Analyze different techniques used for DNA typing. **CO3**: Use various techniques used for Quantitation and Qualitation of extracted DNA samples. **CO4**: Describe the working of PCR Technique. **CO5**: Construct DNA Typing Report for Criminal and parental dispute cases.
	17BSFH6D51	DISCIPLINE SPECIFIC ELECTIVE: EMAIL AND CLOUD FORENSIC	**CO1**: Describe the concept of email & working of the email. **CO2**: Demonstrate the tools for examinations of emails which includes header analysis and recovery of email. **CO3**: Articulate the main concepts, key technologies, architecture and infrastructure of cloud computing. **CO4**: Discuss the technical and Forensic view, challenges in the cloud, examination of VMwares and log analysis.
	17BSFH6D52	DISCIPLINE SPECIFIC ELECTIVE: MICROBIAL FORENSIC	**CO1**: Describe bio-crime, bioterrorism in terms of historical events; morphology, lifecycle and epidemiology of micro-organisms of forensic significance. **CO2**: Interpret and validate evidences of microbial forensics through appropriate protocols, tools and techniques **CO3**: Distinguish between various pathogenic and non-pathogenic micro-organisms; modes of bioterrorism & bio-crimes; epidemiology; and techniques **CO4**: Recommend protocols to be followed from crime scene to the interpretation of microbial evidences in forensics. **CO5**: Formulate various combinations of protocols and methods feasible for the given scenario of microbial forensics.

Semester	Course Code	Course Name	Course Outcomes (COs)
	17BSFH6D51L	DISCIPLINE SPECIFIC ELECTIVE: EMAIL AND CLOUD FORENSIC LAB	**CO1**: Demonstrate the technique of email data recovery from internet cache using different email platform. **CO2**: Describe about email header extraction & it's investigation. **CO3**: Define the Virtual Machine creation in Operating System **CO4**: Articulate the technique of imaging and Analysis in VMware.
	17BSFH6D52L	DISCIPLINE SPECIFIC ELECTIVE: MICROBIAL FORENSIC LAB	**CO1**: Illustrate the safety precautions to be followed with respect to handling microorganisms. **CO2**: Demonstrate competency to handle, isolate and identify the microorganisms. **CO3**: Differentiate between bacteria and fungi type of organisms from the perspective of forensic significance **CO4**: Write protocols to isolate and study organisms retrieved from the scene of crime.
	19MATH0G9	GENERIC ELECTIVE: BASIC MATHEMATICS	**CO1**: Recall basic concepts and formulae for percentages, permutations, combinations ad probability theory. **CO2**: Understand the skills required to convert word problems to mathematical equations. **CO3**: Apply the knowledge of combinatorics to develop a sense of estimating the number of scenarios. **CO4**: Analyze complex networks and graphs to make blueprints and thought experiments. **CO5**: Assess the various permutations and combinations to arrive at correct probabilities. **CO6**: Ability to build mathematical structures for professional development.
	16BAJM5G03	GENERIC ELECTIVE: INTRODUCTION TO JOURNALISM AND MASS COMMUNICATIONS	**CO1**: Define different concepts of mass communication and journalism. **CO2**: To be able to discuss and analyze the different forms of media, its uses and its effects. **CO3**: Write and design content for different forms of media- News reporting, Radio and TV scripts, advertising and public relations. **CO4**: Value the importance and relevance of media in everyday life