Teerthanker Mahaveer University College of Paramedical Sciences

B.Sc. (Forensic Sciences)

Programme Outcome

PO-1	:	Understanding ways of functioning effectively as an individual independently and as a
		member in diverse team in multidisciplinary settings (Attitude).
PO-2	:	Understanding requirements of continuous education as a function of growth and
		maintenance of professional competence (Lifelong learning).
PO-3	:	Understanding environmental consciousness and societal concerns in achieving
		sustainable development (Environment and Sustainability).
PO-4	:	Applying computer skills in health care system and taking entrepreneurial decisions
		(Entrepreneurship).
PO-5	:	Applying knowledge to assess societal, health, safety and legal issues related to
		Professional practice (Social interaction & effective citizenship).
PO-6	:	Applying systematized problem solving techniques to identify and correct procedural
		errors to verify the accuracy of laboratory result obtained.(Problem analysis and
		solving).
PO-7	:	Applying appropriate techniques, resources and tools with an understanding of
		limitations (Technology savvy/usage).
PO-8	:	Developing the ability towards ethical as well as critical thinking. (Critical thinking)
PO-9	:	Executing professional conduct and interpersonal communicational skills effectively
		with society at large (Communication).

Programme Specific Outcome

PSO-1	:	Understanding the concepts and tools and techniques of the Sciences (Chemistry,
		Physics, Biology, Psychology, Computer Science, statistics etc.) Related to Forensic
		Science and Criminal Justice system.
PSO-2	:	Understanding the Need and nature and different divisions of forensic Science, Crime
		and Criminal law and structural and functional organization of various crime agencies
		(CBI. INTERPOLE, RAW).
PSO-3	:	Understanding the different physical and chemical methods for the Analysis of
		different physical evidence at the various crime scenes.
PSO-4	:	Demonstrating analytical subject specific skills involving the principles, practices and
		techniques
		of specific field.
PSO-5	:	Applying major techniques for evidence collection and analysis at crime scene and
		selecting Appropriate technique.
PSO-6	:	Applying quality control, safety measures & maintenance procedure of laboratory
		equipment.

Course Outcomes

BFS-S-105	CO-1	Understanding the concepts, theories, models & techniques and rationale
		of training in Forensic Science
	CO-2	Discussing the definition, characteristics, classification of Crime, Crime
		scene and steps involved in Crime Scene and Criminal investigation
	CO-3	Identifying about professional and ethical responsibility of a Forensic
		Scientist.
	CO-4	Explaining the structural and functional levels of various divisions of
		forensic laboratory.
	CO-5	Applying the importance of Physical evidences at various Crime Scenes
		(homicide, suicide, and hanging, hit and run).
BFS-S-103	CO-1	Remembering the anatomy of plant and human skeletal system (including
		teeth), and morphology of leaves, flowers, stem and root so as to
		recognize them as biological evidence if present in various crime scenes.
	CO-2	Understanding the concept of biochemical structure and function of bio-
		molecules such as proteins, fat, nucleic acid, etc., to know their
		importance in individualization and identification of an individual.
	CO-3	Explaining the classification of angiosperms and gymnosperms and
		Explaining the mechanical and conducting tissue System of these plants.
	CO-4	Identifying the process of ossification, different types of bones, dental
		structure of humans, types of teeth and arrangement to apply the
		knowledge for identification of deceased and criminal investigation.
	CO-5	Describing the Classification of microorganisms and explaining the
		concept of pure culture and methods to control micro-organisms and
		their importance in Forensic microbiology.
BFS-S-106	CO-1	Remembering the basic knowledge about computer science
	CO-2	Understanding the concepts of number system.
	CO-3	Identifying the concepts and implementing logic gate.
	CO-4	Describing the structural and functional importance of different parts of
		operating system.
	CO-5	Analyzing the different OSI layer of computer network.
TMUGE101	CO-1	Remembering and understanding of the basic of English grammar and
		vocabulary.
	CO-2	Understanding of the basic Communication process.
	CO-3	Applying correct vocabulary and tenses in sentences construction.
	CO-4	Analyzing communication needs and developing communication
		strategies using both verbal & non-verbal method.
	CO-5	Drafting applications in correct format for common issues.
	CO-6	Developing self-confidence.
BFS-S-108	CO-1	Remembering the basic knowledge of Chemistry (Inorganic and organic
		Chemistry).
	CO-2	Understanding the concept of Bohr atomic models and quantum
		mechanical model of atom.
	CO-3	Identifying various methods of preparations of hydrocarbons.
	CO-4	Describing the classification of organic compounds & concept of organic
		reaction mechanism and isomerism.

	CO-5	Describing advanced symmetry concepts of chemical molecules and its
		applications.
BFS-S-109	CO-1	Remembering the basic knowledge of Physics.
	CO-2	Understanding The central concepts of quantum mechanics: wave
		functions, momentum and energy operator, the Schrodinger equation,
		time dependent and time independent cases,
	CO-3	Understanding The properties of nuclei like density, size, binding energy,
		nuclear forces and structure of atomic nucleus, liquid drop model and
		nuclear shell model and mass formula.
	CO-4	Understanding the probability density and the normalization techniques,
		and applying the knowledge for skill development on Problem solving e.g.
		one-dimensional rigid box, tunneling through potential barrier, step
		potential, rectangular barrier.
	CO-5	Padipactivity
BES_S_205	<u> </u>	Knowing the fundamentals of law and its importance in any Criminal
DF3-3-203	0-1	instice system
	CO-2	Understanding the concents of Civil and Criminal law and its relevance to
		Forensic Science
	CO-3	Describing the concepts of some sections of IEA, IPC, and CrPC related
		with Forensic Science.
	CO-4	Identifying the structural and functional levels of various Crime
		Investigation agencies at National and International level.
	CO-5	Understanding the concept of Dowry Prohibition Act, Immoral Traffic
		Prevention Act, Wildlife Protection Act., and Environment Protection Act.
BFS-S-203	CO-1	Recalling the fundamental concept of physiological systems of human
		body and understanding their importance in crime investigations.
	CO-2	Understanding the concepts of immunology and their role in
		identification of an individual
	CO-3	Understanding the fundamental concept of Tissue system and their
		importance in crime scene investigations.
	CO-4	Applying the knowledge of the biochemical structure and function of DNA
		for individualization of human being.
	CO-5	Applying the principle and mechanics of various microscopes for using
	<u> </u>	them to invisualize trace evidence and comparing it with control samples.
DF3-3-200	0-1	concerning the concept of digital forensics advance technology and its
	CO-2	Identifying the concept of Human Biometric system based on human
		hiological distinct characteristics and applying the knowledge to solve the
		identity theft related cases.
	CO-3	Summarizing the different phases of incident response and its importance
		in maintaining network security.
	CO-4	Explaining the concept of cyber security tools and their relevance related
		with different forensic digital crimes.
	CO-5	Applying the concept of digital crime scene evidence collection and data
		retrieval methods for different cyber security crimes.
BFS-S-208	CO-1	Remembering the fundamental concept of Chemistry (Physical and

		organic Chemistry).
	CO-2	Understanding the laws of Thermodynamics.
	CO-3	Understanding the basic concept of Thermo chemistry.
	CO-4	Summarizing the different methods of preparation of aromatic
		hydrocarbon and aryl halides
	CO-5	Explaining the ionization of electrolytes and salt hydrolysis.
BFS-S-209	CO-1	Recognising the concept of simple harmonic motion and damped
		oscillator.
	CO-2	Recalling the frame of references and understanding fundamentals of
		special relativity.
	CO-3	Understanding the concept of relativity and implementing the knowledge
		for context of time dilation, length contraction, and relativistic addition of
		velocities.
	CO-4	Explaining the concept of Dynamics of rigid bodies and Moment of inertia.
	CO-5	Applying the concept of gravitation
TMUGE201	CO-1	Remembering & understanding the basics of English Grammar and
		Vocabulary
	CO-2	Understanding the basics of Listening, Speaking & Writing Skills
	CO-3	Understanding principles of letter drafting and various types of formats.
	CO-4	Applying correct vocabulary and grammar in sentence construction while
		writing and delivering presentations
	CO-5	Analyzing different types of listening, role of Audience & Locale in
		presentation
	CO-6	Creating Official Letters, E-Mail & Paragraphs in correct format.
BFS-S-303	CO-1	Remembering the composition of biological fluids – blood, urine, semen,
		saliva, sweat and mlik and Applying for chemical and serological
	<u> </u>	examination of samples.
	0-2	nattern analysis in solving Crime scene
	CO-3	Inderstanding the bair and fiber morphology and analyzing that how this
	CO-3	knowledge assists in death Investigations
	CO-4	Applying the art of collecting packaging and preserving different types of
		biological evidences and Applying this during the reconstruction of crime
		scene practical.
	CO-5	Analyzing the biological evidences such as blood, urine etc encountered
		in various crime scene
BFS-S-305	CO-1	Understanding the concept of Forensic Medicine & concept of inquest,
		oath and various court proceedings used in medico legal investigation.
	CO-2	Interpreting the concept of bimolecular changes after death and it's the
		Medico legal significance
	CO-3	Explaining the wounds and injuries their nature, classification and laws
		and differentiate the homicide, suicidal and accidental injuries.
	CO-4	Applying the Forensic anthropological & forensic odontological
		techniques to determine age, sex and race from skeletal remains.
	CO-5	Analyzing the different asphyxia death scenarios like hanging,
		strangulation and drowning through case study.
BFS-S-310	CO-1	Remembering the significance of cyber forensic investigation process and

		when to conduct it.
	CO-2	Understanding the various technical issues related with cyber forensic
		investigations
	CO-3	Explaining the Design and implementation of security policies using
		software and hardware tools.
	CO-4	Applying the tools, technique and algorithms of cryptography and its
		applications in cyber security.
	CO-5	Analysing the concept of cyber security and its potential network threats.
TMUGE301	CO-1	Remembering and understanding the English grammar and vocabulary.
	CO-2	Understanding the art of public speaking and strategies of reading
		comprehension.
	CO-3	Applying correct vocabulary and sentence construction during public
		speaking or professional writing.
	CO-4	Analyzing different types of sentences like simple, compound and
		complex. Drafting notice, agenda and minutes of the meeting.
	CO-5	Developing speaking skills during common conversation and power point
		presentation.
BFS-S-306	CO-1	Understanding basic concepts in the context of ecological and
		environmental sciences.
	CO-2	Interpreting the ideas about energy resources in today's scenario and
		discussing about alternate energy sources.
	CO-3	Classifying and describe biodiversity and also summarize
		biogeographically distribution of India.
	CO-4	Describing concepts and methods to apply in environmental
		communication and public awareness.
	CO-5	Interpreting the ethical and cultural conduct in environmental activities.
BFS-S-308	CO-1	Describing the basic concept of analytical chemistry. Qualitative and
	<u> </u>	quantitative analysis.
	0-2	in chromatography, and Explaining the applications of chromatographic
		techniques
	CO-3	Applying the basic statistical treatment of the analytical data for getting a
		correct result
	CO-4	Analyzing the chemical structure of water and soil.
	CO-5	Analyzing the chemical composition of cosmetics and their functions in
		different products.
BFS-S-309	CO-1	Understanding the relation between electric field and potential,
		exploiting the potential to solve a variety of problems, and relating it to
		the potential energy of a charge distribution.
	CO-2	Describing electric dipoles and the role of molecular dipoles in the
		electrostatic response of dielectrics. Demonstrating a working
		understanding of capacitors.
	CO-3	Identifying the Calculation of the magnetic forces that act on moving
		charges and the magnetic fields due to currents (Biot- Savart and Ampere
		laws)
	CO-4	Applying the Gauss's law of electrostatics to solve a variety of problems.
	CO-5	CO5 Applying the concepts of induction and self-induction, to solve

		problems using Faraday's and Lenz's laws
TMUGS-301	CO-1	Utilizing effective verbal and non-verbal communication techniques in
		formal and informal settings
	CO-2	Understanding and analyzing self and devising a strategy for self growth
		and development.
	CO-3	Adapting a positive mindset conducive for growth through optimism and
		constructive thinking.
	CO-4	Utilizing time in the most effective manner and avoiding procrastination.
	CO-5	Making appropriate and responsible decisions through various techniques
		like SWOT, Simulation and Decision Tree.
	CO-6	Formulating strategies of avoiding time wasters and preparing to-do list
		to manage priorities and achieve SMART goals.
BFS-S-403	CO-1	Remembering the morphology of arthropods and apply its use in
		estimating time since death under forensic Entomology.
	CO-2	Explaining the concept of wild life forensic, and evidences like pug marks,
		ivory and their significance in conserving natural resources
	CO-3	Examining the importance of various microorganisms responsible for
		cases like food poisoning and bioterrorism.
	CO-4	Identifying bird's flight mechanism and feather topography to avoid bird
		accidents and their illegal trading.
	CO-5	Applying the morphological features of botanical evidences like pollens,
		algae and diatoms useful in crime investigations.
BFS-S-411	CO-1	Remembering the morphology of arthropods and apply its use in
		estimating time since death under forensic Entomology.
	CO-2	Explaining the concept of wild life forensic, and evidences like pug marks,
		ivory and their significance in conserving natural resources
	CO-3	Examining the importance of various microorganisms responsible for
		cases like food poisoning and bioterrorism.
	CO-4	Identifying bird's flight mechanism and feather topography to avoid bird
		accidents and their illegal trading.
	CO-5	Applying the morphological features of botanical evidences like pollens,
	60.1	algae and diatoms useful in crime investigations.
BFS-S-405	0-1	Understanding the fundamental principles of fingerprints on which
	<u> </u>	Describing concent of classification and applying the cataloguing of
	0-2	fingerprint patterns
	<u> </u>	Explaining the types of fingerprint patterns encountered at scene of
	CO-3	crime
	CO-4	Applying the procedure of physical and chemical techniques of
	CO 4	developing fingerprints on crime scene evidence
	CO-5	Analyzing the significance of palm prints, and their historical importance
		in forensic science.
BFS-S-410	CO-1	Understanding the concept, principal and working mechanism of forensic
		auditing
	CO-2	Understanding the objectives and features of the Information Technology
		Act, 2000 and Application of the provisions enshrined in the Act by
		gathering data obtained from judicial precedents.

	CO-3	Describing the concept of Electronic world and issue related with cyber
		security
	CO-4	Examining the different kind of Fraud related with e-commerce and
		forensic accounting.
	CO-5	Analyzing the importance of a systematic procedure for investigation of
		data by applying data recovery methods and their significance in cyber
		security.
TMUGE401	CO-1	Remembering and understanding the English grammar and vocabulary.
	CO-2	Understanding the essentials of effective listening and speaking.
	CO-3	Understanding the corporate expectations and professional ethics.
	CO-4	Applying correct vocabulary and sentence construction during
		professional writing or job interviews.
	CO-5	Analyzing different types of interviews. Drafting resume, C.V. or cover
		letter.
BFS-S-408	CO-1	Understanding the fundamentals of solution in reference to the
		properties of ideal, non-ideal solutions.
	CO-2	Understanding the concepts of electrochemistry and conductance and
		their applications.
	CO-3	Explaining and analyzing the preparation and reaction of DI azonium sait
	<u> </u>	And amines.
	CO-4	Analyzing the structure of carbonydrate, their chemical properties,
	CO 5	Evaluating the various methods of potentiometric titrations
BES_S_/09	CO-3	Linderstanding the concept of geometrical optics including the wave
DI 3-3-403	CO -1	motion
	CO-2	Describing the superposition of a range of collinear and mutually
		perpendicular simple harmonic motions and their applications.
	CO-3	Explaining the different types of waves and their velocities: Plane,
		Spherical, Transverse, Longitudinal and the concept of concept of
		temporal and spatial coherence
	CO-4	Identifying the basic and advanced concept of holography, interference
		and diffraction
	CO-5	Applying the Fraunhoffer Diffraction from apertures: Rectangular, Slit,
		Double Slit, Grating, Circular apertures.
TMUGS-401	CO-1	Communicating effectively in a variety of public and interpersonal
		settings.
	CO-2	Applying concepts of change management for growth and development
		by understanding inertia of change and mastering the Laws of Change.
	CO-3	Analyzing scenarios, synthesizing alternatives and thinking critically to
		negotiate, resolve conflicts and develop cordial interpersonal
	<u> </u>	relationing in a team and enabling other poorts to act while encourse in a
	CO-4	runctioning in a team and enabling other people to act while encouraging
		Browth and creating mutual respect and trust.
RES_S_E10		Inderstanding the concent of research research types goals and criteria
DL2-2-210	0.1	of a good research research process formulation and research related
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		cullul issues.

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	CO-4	Applying the Preparation, Properties And Reactions Of Hydrides Of
		Nitrogen, Halides And Oxohalides.
	CO-5	Analyzing the Concept of activation energy and its calculation from
		Arrhenius equation.
BFS-S-509	CO-1	Remembering the basic concepts of thermodynamics, the first and the
		second law of thermodynamics.
	CO-2	Explaining entropy and the associated theorems, the thermodynamic
		potentials and their physical interpretations.
	CO-3	Describing the kinetic theory of gases, Maxwell-Boltzman distribution law,
		equitation of energies, mean free path of molecular collisions, viscosity,
		thermal conductivity
	CO-4	Applying Fundamental concept of ideal and real gas in physics reactions
	CO-5	Analyzing the Behavior of Real Gases.
BFS-S-603	CO-1	Understanding the basic principles and theory of chromatographic and
		Electrophoresis techniques their usefulness in processing of crime scene
		evidence
	CO-2	Describing the concept of Spectroscopy, electromagnetic spectrum,
		sources of radiation their relevance in crime scene investigation
	CO-3	Applying the principles of Electrophoretic, chromatographic and
		spectroscopic techniques and their application in identifying chemical and
		biological materials.
	CO-4	Analyzing the laboratory procedures of chromatographic and
		Electrophoresis and spectroscopic
	CO-5	Evaluating the working of microscopy in visualizing trace evidence and
	60.1	comparing it with control samples.
BFS-5-606	0-1	Understanding the concept of Forensic Toxicology, poisons and Drugs
		foronsic laboratorios
	<u> </u>	Understanding the concept of Narcotic Drugs & Psychotropic Substances
	0-2	Act 1985
	CO-3	Identifying the signs and symptoms of common poisoning (Corrosives
		Irritants, Neurotropic, Asphysiants, Cardiac, Spinal and Miscellaneous
		group).
	CO-4	Applying a complete knowledge to all laboratory procedures for the
		examination of biological and non biological evidence containing
		unknown drugs through systematic analysis
	CO-5	Analyzing the toxicological signs & symptoms of toxins and their
		pharmacological effect on the body when administered through case
		study.
BFS-S-604	CO-1	Understanding the concept of forensic psychology and its significance in
		crime scene investigation
	CO-2	Describing the objectives of mental health act and chapters and section
		related with mental health provisions of a mentally ill person.
	CO-3	Explaining the interface of psychology and the law, with a specific focus
		on sec 84 of insanity.
	CO-4	Applying the concept of psychological based investigative techniques like
		polygraph, Narcoanalysis and brain electrical oscillation signatures used in

		deception of truth.
	CO-5	Analyzing the concept of Nature of Insanity, insanity defense through
		various case studies
BFS-S-608	CO-1	Understanding the properties of transition metals like variable oxidation
		states, color, magnetic and catalytic properties
	CO-2	Describing the concept of vibrational motion in physical chemistry
	CO-3	Explaining the Schrodinger wave equation for Rigid rotor and Linear
		harmonic oscillator and calculate their respective energies.
	CO-4	Applying the fundamentals of photochemistry and laws governing it such
		as Beer Lambert law
	CO-5	Applying the quantum mechanical operators, quantization, probability
		distribution, uncertainty principle and application of quantization to
		spectroscopy.
BFS-S-609	CO-1	Understanding the concept of lattice, crystals and such as the reciprocal
		lattice and the Brillouin zone and the dynamics of atoms and electrons in
		solids and diffraction of X-rays by solids to determine the crystal
		structure.
	CO-2	Describing the concept of Type I and type II Superconductors.
	CO-3	Identifying the origin of the dielectric properties exhibited by solids and
		the concept of polarizability
	CO-4	Applying the basics of phase transitions and the preliminary concept and
		experiments related to Superconductivity in solid.
	CO-5	Applying the fundamentals of the elementary lattice dynamics and its
		influence on the properties of materials as well as concept of lattice
		vibrations, phonons.