



BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI-620024

B.Sc. FORENSIC SCIENCE

**CHOICE BASED CREDIT SYSTEM–LEARNING OUTCOMES BASED
CURRICULUM FRAMEWORK (CBCS - LOCF)**

(Applicable to the candidates admitted from the academic year 2026-2027 onwards)

Sem	Part	Courses	Title	Ins. Hrs.	Credits	Exam. Hours	Maximum Marks		
							Int.	Ext.	Total
I	I	Ability Enhancement Course – I (AEC - I)	(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100
	II	Ability Enhancement Course – II (AEC - II)	English Course - I	6	3	3	30	70	100
		Core Course -1 (CC - 1)	Introduction to Forensic Science and Crime Scene Management	4	4	3	30	70	100
		Core Practical - 1 (CP - 1)	Forensic Science and Crime Scene Management Laboratory	4	4	3	40	60	100
	III	Allied Course – 1 (AC - 1)	Fundamentals of Physics	4	4	3	30	70	100
		Allied Practical - 1 (AP-1)	Fundamentals of Physics Laboratory	2	**	**	**	**	**
	IV	Value Education		2	2	3	30	70	100
		Interdisciplinary Course –1 (IDC - 1) #	One Course from Outside Department	2	2	3	30	70	100
	Total			30	22	--	--	--	700
II	I	Ability Enhancement Course – III (AEC - III)	(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100
	II	Ability Enhancement Course – IV (AEC - IV)	English Course - II	6	3	3	30	70	100
	III	Core Course- 2 (CC - 2)	Forensic Instrumentation	4	4	3	30	70	100
		Core Practical - 2 (CP - 2)	Forensic Instrumentation Laboratory	4	4	3	40	60	100
		Allied Course – 2 (AC - 2)	Introduction to Psychology	4	4	3	30	70	100
		Allied Practical - 1 (AP-1)	Fundamentals of Physics Laboratory	2	4	3	40	60	100
	IV	Skill Enhancement Course - 1 (SEC - 1) ##	Naan Mudhalvan Course	2	2	3	30	70	100
		Interdisciplinary Course – 2 (IDC - 2) #	One Course from Outside Department	2	2	3	30	70	100
	Total			30	26	--	--	--	800

III	I	Ability Enhancement Course – V (AEC - V)	(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100
	II	Ability Enhancement Course – VI (AEC - VI)	English Course - III	6	3	3	30	70	100
	III	Core Course- 3 (CC - 3)	Forensic Physics and Ballistics	4	4	3	30	70	100
		Core Practical - 3 (CP - 3)	Forensic Physics and Ballistics Laboratory	4	4	3	40	60	100
		Allied Course – 3 (AC - 3)	Fundamentals of Chemistry	4	4	3	30	70	100
		Allied Practical - 2 (AP-2)	Fundamentals of Chemistry Laboratory	2	**	**	**	**	**
	IV	Skill Enhancement Course - 2 (SEC - 2) ##	Naan Mudhalvan Course	2	2	3	30	70	100
		Interdisciplinary Course – 3 (IDC - 3) \$\$	One Course from Outside Department	2	2	3	30	70	100
		Health & Wellness @		--	1	--			100
Total			30	23	--	--	--	800	
I	Ability Enhancement Course – VII (AEC - VII)	(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100	
IV	II	Ability Enhancement Course – VIII (AEC - VIII)	English Course - IV	6	3	3	30	70	100
	III	Core Course- 4 (CC - 4)	Forensic Biology and Serology	4	4	3	30	70	100
		Core Practical - 4 (CP - 4)	Forensic Biology and Serology Laboratory	4	4	3	40	60	100
		Allied Course – 4 (AC - 4)	Fundamentals of Computers	4	4	3	40	60	100
		Allied Practical - II (AP-II)	Fundamentals of Chemistry Laboratory	2	4	3	30	70	100
	IV	Skill Enhancement Course - 3 (SEC - 3) ##	Naan Mudhalvan Course	2	2	3	30	70	100
		Interdisciplinary Course – 4 (IDC - 4) \$\$	One Course from Outside Department	2	2	3	30	70	100
	Total			30	26	--	--	--	800
	Summer Internship / Industrial Activity during the Summer Vacation after II Year								

V	III	Core Course - 5 (CC - 5)	Forensic Chemistry and Toxicology	4	4	3	30	70	100
		Core Course - 6 (CC - 6)	Forensic Medicine	5	4	3	30	70	100
		Core Course - 7 (CC - 7)	Cyber Crime	5	4	3	30	70	100
		Core Course - 8 (CC - 8)	DNA Forensics	5	4	3	30	70	100
		Core Practical - 5 (CP - 5)	Forensic Chemistry and Toxicology Laboratory	5	4	3	40	60	100
	IV	Skill Enhancement Course - 4 (SEC - 4)	Basics of Forensic computers	2	2	3	30	70	100
		Skill Enhancement Course - 5 (SEC - 5) ##	Basics of Digital Evidence	2	2	3	30	70	100
		Introduction to Disaster Management		2	2	3	30	70	100
		Summer Internship / Industrial Activity @@	(with Viva-Voce)	--	2	--	20	80	100
	Total			30	28	--	--	--	900
VI	III	Core Course - 9 (CC - 9)	Digital Forensics	4	4	3	30	70	100
		Core Course- 10 (CC - 10)	Forensic Anthropology	5	4	3	30	70	100
		Core Course- 11 (CC - 11)	Forensic Psychology	5	4	3	30	70	100
		Core Project Work (CPW) @@	Project Work (with Viva- Voce)	6	4	3	20	80	100
	IV	Value Added Course	General Studies for Competitive Examinations	2	1	--	30	70	100
		Skill Enhancement Course - 6 (SEC - 6)	Mobile Forensics	2	2	3	30	70	100
		Skill Enhancement Course - 7 (SEC - 7) ##	Naan Mudhalvan Course	2	2	3	30	70	100
		Environmental Studies		2	2	3	30	70	100
		Gender Studies		2	1	3	30	70	100
		Extension Activities *		--	1	--	--	--	--
	Total			30	25	--	--	--	900
Grand Total			180	150	--	--	--	4900	

ALLIED COURSE

First Year	Second Year
1. Physics 2. Psychology	1. Chemistry 2. Computers

SKILL ENHANCEMENT COURSE(SEC)			
Sl. No.	Title of paper	Sl. No.	MANDATORY Naan Mudhalvan Scheme##
1.	Introduction to Biometrics	1.	2nd Semester:
2.	Basics of Audio and Video Evidences		
3.	Accident Investigation	2.	3rd Semester:
4.	Basics of Forensic Computers		
5.	Basics of Digital Evidences	3.	4th Semester:
6.	Mobile Forensics		
7.	Food Safety and Testing	4.	5th Semester:
--		5.	6th Semester:

INTERDISCIPLINARY COURSE (IDC) FOR WHO HAVE OPT TAMIL AS PART-I (for other Department Students only)	
1 st Semester	Fundamentals of Crime Criminology and Policing
2 nd Semester	Criminal Law
3 rd Semester	Fingerprints and Other Impressions
4 th Semester	Examination of Questioned Documents

INTERDISCIPLINARY COURSE (IDC)# FOR WHO HAVE NOT OPT TAMIL AS PART - I		
Those who have studied Tamil upto 10 th +2 but opt for other languages in degree	1 st Semester	Special Tamil - I
	2 nd Semester	Special Tamil – II
Those who have not studied Tamil in school level	1 st Semester	Basic Tamil – I
	2 nd Semester	Basic Tamil – II
Those students who opt for either special Tamil (or) Basic Tamil as IDCs, have to choose 2 more IDCs courses in their 3 rd and 4 th Semester from Outside his/her department.		

INTERDISCIPLINARY COURSE (IDC) \$\$ FOR NCCCADETS ONLY	
NCC Course is a Compulsory Course for the NCC Cadets in the 3rd Semester:	NCC Course is a Compulsory Course for the NCC Cadets in the 4th Semester:
Introduction to NCC	1. Special Subject Army (or) 2. Special Subject Navy (or) 3. Special Subject Air force
Those students who opt for NCC Courses as IDCs, have to choose 2 more IDCs courses in their 1st and 2nd Semester from Outside his/her department.	

SUMMARY OF CURRICULUM STRUCTURE OF UG PROGRAMMES

Sl. No.	Part	Types of the Courses	No. of Courses	Credits for Each Course	Total Credits	Marks
1.	I	Ability Enhancement Course	4	3	12	400
2.	II	Ability Enhancement Course	4	3	12	400
3.	III	Core Courses	11	4	44	1100
4.		Core Practical	5	4	20	500
5.		Allied Courses	4	4	16	400
6.		Allied Courses Practical	2	4	8	200
7.		Core Project Work	1	4	4	100
8.	IV	Skill Enhancement Courses	7	2	14	700
9.		Interdisciplinary Course	4	2	8	400
10.		Value Education	1	2	2	100
11.		Health & Wellness	1	1	1	100
12.		Introduction to Disaster Management	1	2	2	100
13.		Summer Internship / Industrial Activity	1	2	2	100
14.		Value Added Course	1	1	1	100
15.		Environmental Studies	1	2	2	100
16.		Gender Studies	1	2	2	100
17.		Extension Activities (NCC / NSS / SPORTS / ANTI DRUG CELL / YRC & Any Other Activities)	--	1	1	--
	Total		49	-	150	4900

- \$ For those who have studied Tamil upto 10th+2 (Regular Stream)
- + Syllabus for other Languages should be on par with Tamil at degree level
- # Those who have studied Tamil upto 10th+2 but opt for other languages in degree level under Part-I should study special Tamil and those who have not studied Tamil in the school level should study Basic Tamil in Part-IV under the Interdisciplinary Course.
- ** Examination at the end of the next semester
- ## Naan Mudhalvan Scheme: As per the Naan Mudhalvan Scheme instructions, 5 courses from 2nd to 6th semester should be studied under Skill Enhancement Course.
- \$\$ NCC Course is one of the Choices in the Interdisciplinary Course. Only the NCC Cadets are eligible to choose this course. However, NCC Course is a Compulsory Course for the NCC Cadets.
- @ **Health and Wellness: Assessments:**
- Use self-reflective worksheets to assess their understanding
 - submit the worksheets to internal audit / external audit
 - Every student's activity report should be documented and the same have to be assessed by the Physical Director with Mentor. The evaluation should be for 100 marks. No examination is required.

Scheme of Evaluation:

Part	Description	Marks
A	Report	40
B	Attendance	20
C	Activities (Observation During Practice)	40
Total		100

@@ Summer Internship / Industrial Activity

Internship will be carried out during the summer vacation after the second year. Viva-Voce will be conducted by the college and Marks shall be sent to the University and the same will be included in the 5th semester Mark Statement.

Summer Internship / Industrial Activity & Project

Work Scheme of Evaluation:

Description	Marks
Report	80
Attendance	20
Total	100

* Extension Activities shall be outside instruction hours.

Programme outcomes (PO):

PO1	Communication Skill: Mandatory language courses facilitate to become proficient in communication, culturally aware, and more employable in both Indian and global contexts. Improve presentations skill, debates, and professional communication.
PO 2	Disciplinary Knowledge: Learn in-depth complex scientific concepts, demonstrate their ability to explain and apply their knowledge. Consistent in learning by earning extra credits in specialized courses within the science domain and enhance disciplinary knowledge.
PO 3	Critical thinking: Field and academic visits will help students to develop observation skills, grasping ability, collect and interpret data and propose models that will help them to understand hypotheses and conclusions.
PO 4	Analytical Reasoning: Through the interactions, students will develop skills of critical reading of texts, identifying gaps in knowledge, formulating scientific questions, and on will recognizing the synthesis of new ideas.
PO 5	Scientific Reasoning: Skill oriented courses will provide details on principles, conduct of proper calibration and use of scientific instrumentation and appropriate use of scientific techniques in experimental design
PO 6	Self-directed Learning: Preparation of field reports helps them to present their results and discussion in a written format that is typically required for their future professions.
PO 7	Reflective Thinking: All core courses with laboratory components will provide exposure to a wide range of research techniques, therein enhancing their understanding of the application of techniques in their domain.
PO 8	Problem Solving: Students will develop the ability to reason, apply numerical concepts, and equations in their fields of study for interpreting scientific data and drawing relevant scientific conclusions.
PO 9	Research-related Skills: Students undertaking a internship will have the opportunity to design, develop and execute their own research ideas in their experiments, thus expanding their knowledge of research methods and laboratory skills.
PO10	Lifelong Learning: Ability to understand the gaps in knowledge and skill, adapt to technological change, engage in self-directed learning.

Year: First

CORE COURSE 1

Semester: I

Code:

**INTRODUCTION TO FORENSIC SCIENCE AND
CRIME SCENE MANAGEMENT
(Theory)**

Credits: 4

COURSE OBJECTIVE:

- The significance of Forensic science to human society.
- The fundamental principles and functions of Forensic science.
- The divisions in a Forensic science laboratory.
- The methods of securing, searching and documenting crime scenes.
- The art of collecting, packaging and preserving different types of physical and trace evidence at crime scenes.
- The legal importance of chain of custody.

UNIT – I: Introduction to Forensic Science

Definitions and Concepts – Meaning, Interdisciplinary nature. Historical Aspects of Forensic Science - Early developments, Key milestones in forensic evolution. Development of Forensic Science Laboratories – Globally & India. Basic Principles of Forensic Science - Frye Standard and Daubert Standard - Scope of Forensic Science - Forensic Science in the Indian Scenario.

UNIT – II: Branches of Forensic Science and Their Importance

Branches of Forensic Science - Forensic biology, Forensic chemistry, Forensic physics, Digital forensics, Toxicology, Ballistics. Hierarchical Setup of Government Forensic Science Laboratories - National, state, and regional labs. Basic Services of Crime Laboratories. Qualifications of Forensic Scientists. Duties of Forensic Scientists. Code of Conduct for Forensic Scientists.

UNIT – III: Crime Scene

Meaning of Crime Scene - Definition and significance. Types of Crime Scenes - Indoor and outdoor, Primary and secondary, Organized and disorganized. Safety Measures at Crime Scenes - Personal safety, Use of protective equipment. Role of First Responding Officer - Securing the scene, Preserving evidence. Coordination at Crime Scene. Evaluation of Crime Scene - 5Ws: Who, What, When, Where, Why, 1H: How

UNIT – IV: Documentation of Crime Scenes

Photography and Videography – Importance & Need. Techniques and procedures - Crime Scene Sketching Methods - Baseline method,

Triangulation method, Coordinate method, Extended coordinate method. Crime Scene Notes – Types and its importance. Search of Crime Scene - Definition and objectives. Search Patterns - Strip/Lane method, Grid method, Zone method, Spiral method, Wheel method. Classification of Evidence. Collection, Handling & Preservation of Evidence. Chain of Custody.

UNIT – V: Importance of Evidence

Definition of Evidence. Importance and Nature of Evidence. Principles of Evidence – Reliability, Validity. Stages of Evidence Evaluation. Management of Mass Disaster Scenes - Identification challenges, Role of forensic teams. Important Evidences for Human Identification – Fingerprints, DNA, Dental records, Skeletal analysis.

UNIT - VI: Current Contours (for Continuous Internal Assessment Only):

Recent developments in forensic science. Basics of cyber and digital forensics. Use of Artificial Intelligence in forensics. New technologies in crime scene investigation. Biometric systems (fingerprint, face, iris). Challenges in forensic science. Legal and ethical issues.

REFERENCES:

- W.J. Tilstone, M.L. Hastrup and C. Hald, Fisher's Techniques of Crime Scene Investigation, CRC Press, Boca Raton (2013).
- S.H. James and J.J. Nordby, Forensic Science: An Introduction to Scientific and Investigative Techniques, 2nd Edition, CRC Press, Boca Raton (2005).
- M. S. Dahiya, Principles and Practices in Contemporary Forensic Sciences, Shanti Prakashan (2015).
- Robert. C. Shaler, Crime Scene Forensics: A Scientific Method Approach, CRC Press (2011)
- M. S. Maloney, Crime Scene Investigation: Procedural Guide, CRC Press (2014)
- B.B. Nanda and R.K. Tiwari, Forensic Science in India: A Vision for the Twenty First Century, Select Publishers, New Delhi (2001).
- R. Saferstein, Criminalistics, 8th Edition, Prentice Hall, New Jersey (2004).
- M. Byrd, Crime Scene Evidence: A Guide to the Recovery and Collection of Physical Evidence, CRC Press, Boca Raton (2001).
- T.J. Gardener and T.M. Anderson, Criminal Evidence, 4th Ed., Wadsworth, Belmont (2001).

COURSE OUTCOMES:

CO1: Understand basic concepts, history, and importance of forensic science.

CO2: Know different branches of forensic science and roles of forensic laboratories.

CO3: Understand types of crime scenes and their management.

CO4: Learn methods of crime scene documentation and evidence handling.

CO5: Understand the importance of evidence and its use in investigation and court.

MAPPING OF CO-PO

CO/ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	S	M	M	M	L	M	M	L	M
CO2	L	S	M	M	S	L	M	M	M	M
CO3	L	S	S	M	S	L	M	S	M	M
CO4	M	S	S	S	S	M	S	S	S	M
CO5	M	S	S	S	S	L	M	S	M	M

S – Strong, M – Moderate, L – Low

Year: First

CORE PRACTICAL 1

Semester: I

Code:

**FORENSIC SCIENCE AND CRIME SCENE
MANAGEMENT LABORATORY
(Practical)**

Credits: 4

COURSE OBJECTIVE:

- To provide practical knowledge of crime scene management and investigation procedures.
- To develop skills in crime scene documentation using photography, videography, and sketching.
- To train students in searching, collecting, and preserving evidence properly.
- To familiarize students with handling different types of evidence and maintaining chain of custody.
- To enable students to perform a complete mock crime scene investigation with accuracy and professionalism.

LIST OF EXPERIMENTS

1. Introduction to Crime Scene Management
2. Securing and Isolating a Crime Scene
3. Crime Scene Safety Measures
4. Crime Scene Photography
5. Videography of Crime Scene
6. Crime Scene Sketching
7. Crime Scene Search Techniques (3) – Baseline, Triangulation, Coordinate method etc.,
8. Collection, Handling and Packing of Evidences – Physical, Trace, Biological etc.,
9. Chain of Custody Documentation
10. Mock Crime Scene Investigation (3) - Murder / Suicide, House Breaking, Accidents etc.,

COURSE OUTCOMES:

- CO1:** To Secure and protect a crime scene properly.
CO2: To record crime scenes using photography, video, and sketches.
CO3: To Use different search methods to find evidence.
CO4: To Collect and preserve evidence correctly.
CO5: To perform a mock crime scene investigation.

MAPPING OF CO-PO

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	S	S	M	S	M	M	S	M	M
CO2	S	S	M	S	S	M	M	M	M	M
CO3	M	S	S	S	S	M	M	S	M	M
CO4	M	S	S	S	S	M	S	S	S	M
CO5	S	S	S	S	S	M	S	S	S	M

COURSE OBJECTIVES:

- To understand the mechanical properties of matter such as elasticity and viscosity.
- To learn the fundamentals of sound and acoustics and their real-life applications.
- To develop knowledge of ray optics and wave optics phenomena.
- To understand the principles and applications of lasers and optical fibers.
- To study basic nuclear physics, radiation, and detection techniques.

Unit I: Properties of matter

Elasticity: Hooke's law – Stress-Strain diagram - Three moduli of elasticity - Poisson's ratio – Relation between q , n , k and σ (No derivation)- Factors affecting elasticity – Bending moment – Young's modulus by uniform bending.

Viscosity: Stream lined motion & turbulent motion – Poiseuille's formula to determine η (without correction for pressure head) – equation of continuity – Bernoulli's theorem (Statement only).

Unit II: Sound

Classification of sound – decibel – Weber Fechner law - Reverberation theory - Sabine's formula – derivation of Sabine's equation – Acoustic design of a Hall – Common acoustical defects and their remedies - Production of ultrasonics by magnetostriction and piezoelectric methods – Acoustical grating – SONAR.

Unit III: Ray and Wave Optics

Dispersion by a prism – Dispersive power- Achromatic combination of prisms – deviation without dispersion - dispersion without deviation – Aberration - chromatic aberration in lenses. Interference, Young's double slit experiments - Fresnel diffraction, Diffraction at a single slit and a circular aperture, plane diffraction grating - Polarization: (Malus's law) Polarization by reflection and refraction, Brewster's law, Production and analysis of elliptically and circularly polarized light.

Unit IV: Laser and Fiber Optics

Laser and its properties – Spontaneous and stimulated emission - Einstein's coefficients - Population inversion – Pumping and its types – Gas laser (He-Ne laser) – Solid state laser (Nd-YAG laser) - Hologram -construction and reconstruction process – General ideas of optical fibre – Numerical aperture and Acceptance angle of fibre – Types of optical fibre – Applications.

Unit V: Nuclear Physics

Nuclear Physics: Isotopes, Nuclear Forces, Atomic Mass Unit, Binding Energy, Mass Defect, Nuclear Reactions (Fission and Fusion), Radioactivity, Half-life and Mean life, Carbon dating

Detectors: Solid-state Detectors; Geiger-Muller Counter - Radiation Hazards: Radiation Levels for Safety; Radiation Protection Methods.

UNIT – VI: Current Contours (For CIA Only)

Applications of Fluid Mechanics in Forensic Science, Role of Viscosity in Industrial and Daily Life Applications, Noise Pollution in Urban Areas and Its Control Measures, Acoustic Design of Auditoriums and Modern Smart Classrooms, Use of Optical Instruments in Forensic Science, Fiber Optics in Internet and Communication Technology, Applications of Lasers in Forensic science. Nuclear Energy: Benefits and Risks in Modern Society, Radiation Hazards and Safety Measures in forensic lab.

Text Books:

1. Properties of Matter – Brijlal & N. Subrahmanyam – S. Chand & Co, 2002.
2. A text book of Optics, Multicoloured Revised Edition, Subramanyam, Brij Lal, Avadhanulu, S. Chand and Co. Pvt Ltd, 2014
3. Engineering Physics, 7th Edition, M.N Avadhanulu and P.G.Kshirsagar, S. Chand and Company Ltd.

Reference Books:

1. Properties of Matter, R. Murugesan, S. Chand & Co. publication, 2016.
2. University Physics, FW Sears, MW Zemansky and HD Young 13/e, Addison-Wesley 1986.
3. University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.
4. Optics, Ajoy Ghatak, 3rd Edition, Mc Graw Hill Co.
5. Fundamentals of Optics, Jenkins and White, 4th Edition, Mc Graw Hill International Publications.
6. An introduction to Laser theory and applications, M.N. Avadhanulu, S. Chand publications Ltd.
7. Engineering Practical Physics, S.Panigrahi & B.Mallick, 2015, Cengage Learning India Pvt. Ltd.
8. A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.

Course Outcomes

- CO1:** Explain elasticity, viscosity, and fluid behavior in physical systems.
- CO2:** Understand and apply concepts of sound, acoustics, and ultrasonics.
- CO3:** Analyze optical phenomena like interference, diffraction, and polarization.
- CO4:** Explain the working and applications of lasers and optical fibers.
- CO5:** Understand nuclear processes, radiation detection, and safety measures.

MAPPING OF CO - PO

COs / POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	L	S	M	M	M	L	L	S	L	M
C02	L	S	M	M	M	L	L	M	L	M
C03	L	S	S	S	M	L	M	S	M	M
C04	L	S	M	M	S	L	M	M	M	S
C05	L	S	M	M	S	L	M	S	M	M

Year: First

ALLIED COURSE PRACTICAL 1

Semester: I, II

Code:

**FUNDAMENTALS OF PHYSICS LABORATORY
(Practical)**

Credits: 4

Course Objectives

- To understand the mechanical properties of matter such as elasticity and viscosity.
- To learn the fundamentals of sound and acoustics and their real-life applications.
- To develop knowledge of ray optics and wave optics phenomena.
- To understand the principles and applications of lasers and optical fibers.
- To study basic nuclear physics, radiation, and detection techniques.

Fundamentals of Physics Laboratory

- Determine Young's modulus of a beam using the uniform bending method.
- Determine Young's modulus of a beam using the non-uniform bending method.
- Determine the coefficient of viscosity of a liquid flowing through a capillary tube.
- Determine the coefficient of viscosity of glycerine using a falling sphere.
- Determine the frequency of a tuning fork by resonance in an air column.
- Study the relationship between frequency, length, and tension.
- Determine the velocity of sound using resonance apparatus.
- Determine the refractive index of prism material.
- Determine the dispersive power of prism material.
- Determine the wavelength of monochromatic light.
- Study polarization and verify Malus' law.
- Determine the refractive index of glass using Brewster's law.
- Determine the numerical aperture and acceptance angle of an optical fibre.
- Study divergence and diffraction of a laser beam (He-Ne or semiconductor laser).
- Measure background radiation and study the operating characteristics of a GM counter.

Course Outcomes

CO1: Explain the fundamental properties of matter, including elasticity, viscosity, and fluid dynamics.

CO2: Describe the principles of sound, acoustics, ultrasonics, and their applications.

CO3: Analyze optical phenomena such as interference, diffraction, polarization, and dispersion.

CO4: Explain the working principles of lasers, holography, and optical fiber communication systems.

CO5: Understand nuclear structure, radioactivity, radiation detection techniques, and radiation safety measures.

MAPPING OF CO-PO

COs / POs	PO 1	PO 2	PO 3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
C01	1	3	2	2	2	1	1	3	-	2
C02	1	3	2	2	2	1	1	2	-	2
C03	1	3	3	3	2	1	2	3	1	2
C04	1	3	2	2	3	1	2	2	1	3
C05	1	3	2	2	3	1	2	3	2	2
C06	2	2	3	3	3	3	3	3	3	2