SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

This Scheme is based on the ORDINANCE -14 (1) PRINCIPLE (01/10/2024), of M.P. Higher education ministry and UGC guidelines of NEP 2020

W.e.f. Session 2025–2026
Credit Distribution Overview
SEMESTER – I (CREDITS 20)

S. No.	Paper code	Course Component and Name of paper	Credit			Marks		Total Marks
			T	P	Total	Max. Int.	Max. Ext.	
1	C-1 FOSC-1T	Core I - The Basis of Forensic Science & Criminalistics	4		6	30	70	100
2	C-1 FOSCIP	Physical Evidence (Practical paper 1)		2		30	70	100
3.	MC2-T/M1-T	Minor - (Chemistry) – Applied Chemistry / (Physics) – Fundamentals of Mechanics and Matters	3		4	30	70	100
4.	MC2-P/M1-P	Practical - Applied Chemistry / Practical - Fundamentals of Mechanics and Matters		1		30	70	100
5.	FOSC-MD	MD: Cyber Security and Digital Hygiene	3		3	30	70	100
6.	FOSC-AEC	AEC: Modern Language: Hindi	2		2	30	70	100
7.	FOSC-V/SEC-T	Vocational/Skill Enhancement Courses – Medicinal Plants	2		3	30	70	100
8.	FOSC-V/SEC-P	Vocational/Skill Enhancement Courses – Medicinal Plants (Practical)		1		30	70	100
		Project Work/Community Engagement/Apprenticeship	2		2			
		Total Credits and Marks			20			800

**Abbreviations Used- Core (Major), Minor, MD: Multi/Inter-Disciplinary, AEC: Ability Enhancement, SEC: Skill Enhancement, DSE: Discipline Specific Elective, VOC: Vocational Course, VAC: Value Added Course.*

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Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Forensic Science			
1	Course Code	C-1 FOSC-1T	
2	Course Title	The Basics of Forensic Science & Criminalities (Core Paper I)	
3	Course Type (Core Course/ Discipline Specific Elective)	Core Course (Theory)	
4	Pre-Requisite (if any)		
5	Course Learning Outcome (CLO)	On successful completion of this course, the students will be able to: 1. To enhance the skill in fundamentals of forensic science, the importance of different types of evidence found at a crime scene and their examination to solve a crime. 2. Understanding the fundamentals of forensic science, which includes crime scene management, importance of various physical, biological and toxicological evidence.	
6	Credit Value	4	
7	Total Marks-100	Max. Marks: 30 +70	**Minimum Passing Marks: 35**

Part B-Content of the Course		
Total No. Of Lectures-Tutorial-Practical (in hours per week): L-T-P:		
Unit	**Topics**	**No. Of Lectures**
I	Forensic Science in Ancient India to Current India: Ancient Foundations of Forensic Science, Forensic Science in the Context of Ancient Vedic Knowledge, Concept of Forensic Science and crime investigation by Kautilya's Arthasastra. History of forensic Science from pre-colonial India to Post Independent India, Development at National and International Level. Concepts of Forensic Science: Basic Principles of Forensic Science and its Significance, Need of Forensic Science, Nature and Scope of Forensic Science, Educational Bodies in India and Other Nations, Organizational Structure of Forensic Science Laboratories in India, Ethics in Forensic Science, Frye Case and	15

	Daubert Standard.	
II	Criminalities: Introduction of Crime Scene, Types of Crime Scene, Crime Scene Management: Technology Management, Logistic Management, Manpower Management, Crime Scene Search Methods, Duties of First Responders at Crime Scene, Coordination between Police Personals and Forensic Scientists at Crime Scene.	15
III	Physical Evidence: Definition, Classification of Physical Evidence- on the Basis of Class, Nature and Size, Different Search Methods for Physical Evidence, Collection, Preservation, Packaging, Labelling, Sealing and Forwarding of Physical Evidence, Chain of Custody.	10
IV	Introduction & Examination of Evidence I: Soil & Paint, Glass, Tool marks, Skid marks, Digital evidence, Cement, Mortar & Concrete, Explosive and Arson Evidence etc.	10
V	Introduction & Examination of Evidence II: Biological and Toxicological Evidence (Blood, Semen, Saliva, Vomit, Tears, Nails, Viscera, Hair & Fibre.	10
Keywords: Forensic Science, Forensic Laboratories, Crime Scene, Search Method, Evidence, Packaging, Sealing, Custody, Soil, Paint, Skid, Cement, Viscera, Blood, Biological, Tears.		

Part C-Learning Resources

Textbooks, Reference Books, Other resources

Essential Reading:

1. JamesS.H.(2014). Forensic Science: An Introduction to Scientific and Investigative Techniques. New York, Taylor & Francis.
2. Saferstein R. (1995). Criminalistics - An Introduction to Forensic Science. USA, Prentice Hall Inc.
3. Sharma B.R. (2003). Forensic Science in Criminal Investigation and Trials. India, Universal Law House.
4. Sharma J. D., (1988). Vidhi vigyan Avem Vish Vigyan. India, Madhya Pradesh Hindi Granth Academy.
5. Sharma J. D. (2011). Apradhon ka Vigyanik Anveshan. India, Madhya Pradesh Hindi Granth Academy.

Suggested Readings:

1. Aitken C.G.G., & Stoney D.A. (1991). The Use of Statistics in Forensic Science. England, Ellis Harwood Limited.
2. Bowen R.T. (2016). Ethics and the Practice of Forensic Science. New York, CRC Press.
3. De F. & P. R. (1983). Forensic Science- An Introduction to Criminalistics. New York, McGraw-Hill.
4. Horswell J. (2016). The Practice of Crime Scene Investigation. New York, CRC Press.
5. Nordby, James, S.H. & J.J. (2003). Forensic Science: An Introduction to Scientific and Investigative Techniques. USA, CRC Press.
6. O'Hara & Osterberg, (1949). An Introduction to Criminalistics. New York, The Macmillan Company.
7. Siegel J. A. & Mirakovits K. (2006). Forensic Science: The Basics. New York, CRC Press.

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Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 30 Marks University Exam (UE): 70 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	There must be written tests and the fourth may be written test/quiz/seminar/assignment. The best three test out of four will be awarded to the student.	30
External Assessment: University Exam Section Time: 03.00 Hours	Section(A): Very Short Questions Section (B): Short Questions Section (C): Long Questions	70

16.9.25

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Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Forensic Science			
1	Course Code	C-1 FOSCIP	
2	Course Title	Physical Evidence (Practical paper 1)	
3	Course Type: (Core Course/ Elective/ Generic Elective Vocational)	Core Course	
4	Pre-Requisite (if any)	To study this course a student must be from Maths/Biology/Science background in 12th Class.	
5	Course Learning Outcome (CLO)	Learning Objectives: After studying this paper, the students will know a. How to search, collect, label, and forward physical evidence found at crime scene. b. Preliminary examination of different physical evidence found at crime scene. c. Gaining hands on training will help the students to handle real crime scenes and work at any forensic laboratory	
6	Credit Value	**2**	
7	Total Marks-100	Max. Marks: 30 +70	**Minimum Passing Marks: 35**

Part B- Content of the Course		
Total No. of Lectures (in hours per week): 2 hours per week Total Lectures: 30 hours		
S. No.	**Topics**	**No. of Lecture**
1.	Collection, packing, labelling & forwarding of the physical evidence associated with biological fluids and wet exhibits	
2.	Collection, packing, labelling & forwarding of the physical evidence of soil/dust and glass materials	
3.	Collection, packing. labelling & forwarding of the physical evidence of hair and fibre of human or animal origin	
4.	Collection, packing, labelling & forwarding of the evidence of liquid	

16.9.25

	materials and pharmaceutical products/drugs of abuse	
5.	Collection, packing, labelling & forwarding of the physical evidence of botanical material including plant parts or diatoms	
6.	Collection, packing, labelling & forwarding of the physical evidence of shell case/cartridge/bullet/pellets	
7.	Collection, packing. labelling & forwarding of the physical evidence of charred documents, questioned documents etc.	
8.	To know the basic steps of crime scene management followed by an investigator.	
9.	Preliminary examination of arson evidence	
10.	Preliminary examination of toxicological evidence	
11.	Preliminary examination of blood stains found on different surfaces like walls, glass, clothes and soil etc.	
12.	Preliminary examination of evidence found in case of vitriolage	

Part C-Learning resources

Suggested readings:

1. De F. & P. R. (1983). Forensic Science- An Introduction to Criminalistics. New York. McGraw-Hill.
2. Horswell J. (2016). The Practice of Crime Scene Investigation. New York, CRC Press.
3. Nordby, James, S.H. & J.J. (2003). Forensic Science: An Introduction to Scientific and Investigative Techniques. USA, CRC Press.
4. O'Hara & Osterberg, (1949). An Introduction to Criminalistics. New York, The Macmillan Company.
5. Siegel J. A. & Mirakovits K. (2006). Forensic Science: The Basics. New York, CRC Press.
6. B.B. Nanda and R.K. Tiwari, Forensic Science in India: A Vision for the Twenty First Century, Select Publishers, New Delhi (2001).

Suggested Equivalent online courses: http://14.139.13.95/CEC/index.php/search_result

Part D- Assessment and Evaluation

Suggested Evaluation methods:

		External Assessment	Marks
		Viva Voce on Practical	20
		Practical Record File	20
		Table work/ Experiments	60
TOTAL			**100**

Assignments:

1. Drawing of rough sketch of indoor/outdoor scene of crime
2. Drawing of final sketch of indoor/outdoor scene of crime
3. Photography of the given scene of crime
4. Searching and labelling of physical evidence at scene of crime

5. Labelling & forwarding of physical evidence
6. Examination of toxicological evidence.

Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Chemistry			
1	Course Code	MC2-T	
2	Course Title	Applied Chemistry	
3	Course Type: (Core Course/ Elective/ Generic Elective Vocational)	Minor 2	
4	Pre-Requisite (if any)	To study this course the students must have the subject Chemistry in 12th Course or equivalent	
5	Course Learning Outcome (CLO)	After completing this course, the student will be able to – • Indigenous Technology in Harappan Period. • Chemistry of medicines, common diseases and their causes. • Pollution, its causes, prevention and control • Various components of food and their role in the body • Chemistry of paper and textiles	
6	Credit Value	03	
7	Total Marks-100	Max. Marks: 30 +70	**Minimum Passing Marks: 35**

Part B- Content of the Course

Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P:

Unit	Topics	No. of lectures
Unit 1	Indigenous Technology in Harappan Period Introduction, Indus or Harappan Civilization, Later Pottery, Knowledge of metallurgy after & during the Harappans, weight measurement, medical science, Jewell making, Dyeing, Pigments, Philosophers Stone, Wootz Steel, Gold, Silver, Mercury, Tin, Lead, Gun Powder, Glass making, Paints, Perfumes.	9
Unit 2	Chemistry of medicine Common diseases and their causes, concept of analgesic, antibiotics, anti-depressant, antihypertensive, antipyretics and	9

16.9.25

	anticoagulants. Concept of bronchodilators, vaccines, anta acids and diuretics, drug metabolism- absorption, distribution, metabolism and excretion (ADME)	
Unit 3	Pollution and its causes Air pollution- causes, effect and prevention Water pollution- sources and effect of water pollution Soil pollution- sources and effect of soil pollution Noise pollution- causes and effect of noise pollution, prevention e-waste pollution- causes and effect of e-waste pollution, prevention. Radioactive pollution- causes and effects of radioactive pollution, prevention, nuclear weapons, nuclear power plants, Chernobyl disaster	9
Unit 4	Components of food and their role in the body Carbohydrates- simple sugar- glucose, fructose and their chemical properties. Complex carbohydrates- starch, cellulose and their digestion. Proteins- amino acids as building blocks of proteins, protein structure primary, secondary, tertiary and quaternary, denaturation of protein and its application in cooking. Lipids/ fats- triglyceride, phospholipids, cholesterol, mono saturated and poly saturated fatty acids, role of fats in cell membrane and hormone production Vitamins- classification of vitamins, water soluble and fat soluble, chemical structure and function of key vitamins- vitamin C, vitamin A, vitamin D, and vitamin B complex. Minerals- essential minerals- calcium, iron, sodium, potassium etc. mineral bioavailability and factors affecting absorption	9
Unit 5	Chemistry of paper and textile Fiber Chemistry: Classification of natural and synthetic fibers (cotton, wool, silk, polyester, nylon, acrylic), Chemical structure of fibers and their relation to properties Textile Wet Processing, introduction to dyes, identification of fibers and dyes Papermaking chemistry- Pulping, Kraft process, Sulfite process, Bleaching, Additives and fillers	9

Activities:

1. Extraction of Tulsi, Neem, Amla, Haldi
2. Gather data on the processes used to purify zinc both historically and currently.
3. Gather images and records pertaining to the history of two rust resistant monuments built in India.
4. Gather information about traditional Indian cosmetics knowledge and traditional Indian drug knowledge
5. Collection of Medicinal plants and their uses from nearby area (Herbarium Preparation)
6. Chart preparation of Ancient Indian Scientist in Chemistry and their contribution
7. Field study of BKS in nearby area
8. Educational Tour of Industries and Research Institutes
9. Prepare the Project and Modals related to Ancient Indian Chemistry

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Part C-Learning Resources
Textbooks, Reference Books, Other resources
Suggested Readings: 1. Traditional Systems of Medicine Hardcover – 30 January 2006 by M.Z. Abdin (Author), Y.P. Abrol (Author), ISBN-10 8173197075, Publisher Narosa Publishing House 2. Traditional System of Herbal Drugs Used for Various Aliments Paperback – 19 November 2024 by Priya V (Author), Ragavi K K (Author), Publisher LAP Lambert Academic Publishing 3. TEXTBOOK OF MEDICINAL CHEMISTRY 4ED VOL 1 (PB 2022) by ALAGARSAMY V. | 1 January 2022, Publisher: CBS Publishers & Distributors Pvt. Ltd 4. Textbook Of Medicinal Chemistry Part-I Authors: Dr. Amit G. Nerkar, Dr. Narendra M. Gowekar, Mrs.Trupti Somnath Kajale (shahane), ISBN-13 978-93-95581-67-7 Mahi publication 5. Pollution: Causes, Effects and Control, Roy M. Harrison, Royal Society of Chemistry, 2001 6. A Primer on Earth Pollution: Pollution Types and Disposal, Editors: J. Senthil Kumar, P. Ponmurugan, A. Vinoth Kanna, ISBN: 978-981-14-7653-2 (Print) ISBN: 978-981-14-7655-6 (Online), Year of Publication: 2020 7. Food: The Chemistry of its Components, By Tom Coultate, ISBN: 978-1-83916-814-7, Publication date: 11 Oct 2023, Royal Society of Chemistry 8. Chemical and Functional Properties of Food Components, 4th Edition, Edited by Hanna Staroszczyk, Zdzislaw E. Sikorski, December 19, 2024 9. Textile and Paper Chemistry and Technology, 1 January 1978 by Jett C. Arthur (Editor), Publisher American Chemical Society 10. Historic Textile and Paper Materials: Conservation and Characterization (Advances in Chemistry Series) Hardcover – Import, 1 February 1986 by Howard L. Needles (Editor), Publisher Amer Chemical Society
Suggested equivalent online courses: 1. Medicinal Chemistry by Prof. Harinath Chakrapani IISER Pune https://onlinecourses.nptel.ac.in/noc20_cy16/ 2. Air Pollution and Control by Prof. Bhola Ram Gurjar | IIT Roorkee http://onlinecourses.nptel.ac.in/noc23_ce14/

Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 30 Marks University Exam (UE): 70 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE): 30	Class Test Assignment/Presentation	**30**
External Assessment: University Exam Section: 70 Time:	Section(A): Very Short Questions (50 words each) Section (B) : Short Questions (200 words each) Section (C): Long Questions (500 words each)	**70**
Total Marks		**100**

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CBCS Annual Pattern
B.Sc. Ist year
CHEMISTRY– Minor-II
Syllabus of Practical Paper

Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Chemistry			
1	Course Code	MC2-P	
2	Course Title	Applied Chemistry Practical	
3	Course Type: (Core Course/ Elective/ Generic Elective Vocational)	Minor-II	
4	Pre-Requisite (if any)	To study this course the students must have the subject Chemistry in 12th Course or equivalent.	
5	Course Learning Outcome (CLO)	By the end of this course students will learn the following aspects of Laboratory in chemical analysis: • Preparation of talcum Powder • Preparation of shampoo • Preparation of enamels • Estimations of different compounds • Synthesis of Different Drugs • Determination of Optical Activity • Separation and Estimation by Solvent extraction	
	Credit Value	1(Practical)	
	Total Marks-100	Max. Marks: 30 +70	**Minimum Passing Marks: 35**

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Part B- Content of the Course		
Total No. of Lectures (in hours per week): 2 hours per week Total Lectures: 30 hours		
S. No.	**Topics**	**No. of Lecture**
1.	Preparations 1. Preparation of talcum Powder 2. Preparation of shampoo 3. Preparation of enamels	03
2.	Estimations 1. Estimation of Iodine from salt 2. Estimation of sweeteners	03
3.	Synthesis of Drug 1. Paracetamol 2. Sulphanilamide	03
4.	Colloids To prepare arsenious sulphide sol and compare the precipitating power of mono-, bi- and trivalent cations. Optical Activity 1. Determination of refractive index and specific refraction of given liquids. [Any two liquids from, CCl4, CHCl3, benzene, xylene, toluene, ethyl alcohol]	03
5	Solvent Extraction 1.Separation and estimation of Mg(II) and Fe(II) Ion Exchange Method 1. Separation and estimation of Mg(II) and Zn(II)	03
Note	Students should visit any chemical industry to learn or observe the process and preparations practically and submit the report of that industrial visit also	
Keywords/Tags: Solvent Extraction, Colloids, Synthesis of drug, Preparation and Estimations		

Part C-Learning resources
Suggested readings: **Textbooks** 1. Timir Tripathi Chromatography and Centrifugation Methods Daya Publishing House 2. Prof. Sarin A. Chavhan, Prof. Sushil Kumar A. Shinde A Guide to Chromatography Techniques Notion Press 3. Vinay Prabha Sharma Practical Organic Chemistry Pragati Prakashan 4. Dr. M.M.N. "Tandon unified practical chemistry" Shiva Lal Agarwal & co. 5. Sudha Goyal (Author), R. P. Singh V. K. Singh (Author), Prashant Singh Ashish Dwivedi

(Author) B.Sc. Chemistry Practical I, Krishna Prakashan Media
6. Reinhart Keese, Martin P. Brändle, Trevor P. Toube Practical Organic Synthesis: A Student's Guide John Wiley & Sons, Inc.,
7. Sudha Goyal B.Sc. Chemistry Practical III Krishna Prakashan Media
8. Furniss, B.S., Hannaford, A.J., Smith, P.W. G., Tatchell, A.R., "Vogel's Textbook of Practical Organic Chemistry", Pearson Education, 2005, 5th Edn.
9. Gurthu, J.N., Kapoor, R., "Advanced Experimental Chemistry", S. Chand and Co., 1987.
10. Sundaram, S., Krishnan, P., Raghavan, P.S., "Practical Chemistry (Part II)", S. Viswanathan Co. Pvt.,1996.
11. Mohd A A, Ramesh K P, Anuradha S, Bassa S, Advanced Laboratory Techniques Chemistry, Scientific International Publishing house, Tamilnadu, 2024

Reference Books:

12. Furniss, B.S., Hannaford, A.J., Smith, P.W. G., Tatchell, A.R., "Vogel's Textbook of Practical Organic Chemistry", Pearson Education, 2005, 5th Edn.

Suggested Equivalent online courses:

13. https://vlab.amrita.edu/?sub=2&brch=190&sim=338&cnt=1
14. http://www.columbia.edu/itc/barnard/biology/biobc2004/edit/experiments/Experiment1- Spec.pdf
15. http://web.pdx.edu/~ralfw/uploads/1/0/2/6/10260941/pulse_oximetry_laboratory_guide.pdf
16. https://www.chem.purdue.edu/courses/chm224/Lab-Experiments/expt4_GENESYS_v2.pdf
17. http://gervind.faculty.mjc.edu/biology_101/101_lab/spectrophotometry/4%20Spectrophotometer%20Fa17.pdf
18. https://www.edaq.com/w/images/6/6e/EXP011_The_pH_Electrode_and_Potentiometric_Titrations_PDF.pdf
19. https://www.philadelphia.edu.jo/academics/ajaber/uploads/CHEM%20540-Chapter%202-Potentiometry-061.pdf
20. https://www.tau.ac.il/~advanal/PotentiometricTitrations.htm
21. https://www.analytik.ethz.ch/praktika/phys_anal/POL/Anleitung_ENG.pdf
22. https://nph.onlinelibrary.wiley.com/doi/pdf/10.1111/j.1469-8137.1948.tb05089.x
23. http://chemistry.du.ac.in/study_material/4103-A/MSc_Polarography.pdf
24. https://fac.ksu.edu.sa/sites/default/files/abbe_experiment.pdf
25. https://web.mst.edu/~tbone/subjects/tbone/chem224/riproc.pdf
26. http://www.fbml.ff.vu.lt/sites/default/files/7_4_en.pdf
27. https://wp.optics.arizona.edu/mnofziger/wp-content/uploads/sites/31/2016/05/OPTI202LLab10-OMD2.pdf
28. http://davjalandhar.com/dbt/chemistry/SOP%20LabManuals/B.Sc.%20BT%20SEM%20IV.pdf
29. https://vlab.amrita.edu/?sub=1&brch=195&sim=545&cnt=1

Suggested equivalent online courses:

1. https://www.my-mooc.com/en/mooc/basic-analytical-chemistry/
2. https://www.my-mooc.com/en/mooc/principles-electronic-biosensors-purduex-nano535x/

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Part D- Assessment and Evaluation			
Suggested Evaluation methods:			
Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz	30	Viva Voce on Practical	70
Attendance		Practical Record File	
Assignments (Charts/ Model Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)		Table work/ Experiments	
TOTAL:100			

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Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Physics			
1	Course Code	M1-T	
2	Course Title	Fundamentals Mechanics and matter (Theory) (Paper)	
3	Course Type: (Core Course/ Elective/ Generic Elective Vocational)	Minor Course	
4	Pre-Requisite (if any)	To study this course the students must have the subject Physics in 12th Class	
5	Course Learning Outcome (CLO)	After completing this course, students will be able to: 1. Analyze Kanad's laws of motion. 2. Understand the contributions of Varahmihira and Vikram Sarabhai to science and the development of mechanics in India. 3. Apply moment of inertia theorems and perform calculations of moment of inertia for different bodies, analyse surface tension, intermolecular forces, apply concepts like capillarity. 4. Analyze fluid dynamics, apply Bernoulli's theorem, and solve problems related to viscosity. 5. Understand gravitational potential, central forces, reduced mass, and Kepler's laws of planetary motion.	
6	Credit Value	03	
7	Total Marks-100	Max. Marks: 30 +70	**Minimum Passing Marks: 35**

Part B-Content of the Course		
Total No. Of Lectures (in hours): 45		
Unit	Topics	No. Of Lectures
I	Historical background 1. Varahamihira's and Vikram Sarabhai's life, their contribution towards science and society. 2. Kanad's three laws of motion, Vaisheshika's theory of elasticity, Concept of	06

	surface tension, fluidity and viscosity in ancient Indian text, Bhaskar Acharya's concept of gravitation, Aryabhatta's calculations of planetary distances.	
II	Rigid and deformable body 1. System of particles and concept of rigid body, Torque, centre of mass: position of the centre of mass, motion of the centre of mass, conservation of linear & angular momentum with examples, single stage rocket, rotatory motion and concept of moment of inertia, theorems on moment of inertia. 2. Hook's law, Young's modulus, Bulk modulus, Modulus of rigidity and Poisson's ratio, Possible values of Poisson's ratio, Poisson's ratio of rubber in the laboratory, Torsion of a cylinder, Strain energy of twisted cylinder. 3. Determining modulus of rigidity of a wire using Torsional pendulum and Maxwell's needle, Searl's method to find Y, I and σ of the material of a wire, Bending of beam, Cantilever.	12
III	Surface Tension 09 1. Inter-molecular forces and potential energy curve, force of cohesion and adhesion, Surface tension, Explanation of surface tension on the basis of intermolecular forces, Surface energy, Effect of temperature and impurities on surface tension, Daily life application of surface tension. 2. Angle of contact, Expression for the pressure difference between the two sides of a curved liquid surface, Capillarity, determination of surface tension of a liquid - capillary rise method and Jaeger's method.	09
IV	Viscosity 1. Ideal and viscous fluid, Streamline and turbulent flow, Equation of continuity, Rotational and irrotational flow, Energy of a flowing fluid, Euler's equation of motion of a non-viscous fluid and its physical significance. 2. Bernoulli's theorem and its applications (Velocity of efflux, shapes of wings of airplanes). 3. Viscous flow of a fluid and coefficient of viscosity, Flow of liquid through a capillary tube, Poiseuille's formula, Stokes formula.	09
V	Gravitation and Central force 1. Conservative and non-conservative force field, Conservation of energy in motion under the conservative and non-conservative forces, Motion under Central forces, Conservative characteristics of central forces. 2. The motion of a two-particles system in Central force, Concept of reduced mass, Reduced mass of Positronium and hydrogen, Motion of celestial bodies and derivation of Kepler's laws.	09
Keywords: Kanad's laws of motion, Vaisheshika's theory of elasticity, Young's Modulus, Bulk Modulus, Modulus of rigidity, Poisson's ratio, Inter-molecular force, Surface tension, Angle of contact, Capillarity, Viscosity, Euler's equation, Poiseuille's formula, Conservative force field, Central force, reduced mass.		

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Part C-Learning Resources
Textbooks, Reference Books, Other resources
Suggested Readings: 1. Prakash I. & Ramakrishna, *A Textbook of Practical Physics*, Kitab Mahal, 2011, 11/e. 2. Squires G. L., *Practical Physics*, Cambridge University Press, 2015, 4/e. 3. Flint B. L. and Worsnop H. T., *Advanced Practical Physics for students*, Asia Publishing House, 197. 4. Chattopadhyay D. & Rakshit P. C., *An Advanced Course in Practical Physics*, New Central Book Agency. 5. Bhaskara II, *Siddhanta Shiromani*, (1150 CE). 6. Dongre N. G., Nene S. G., *Physics in Ancient India*, National Book Trust, India. 7. Chakrabarty Debasish, *Vaisesika Sutra of Kanada*, D.K. Printworld P. Ltd., New Delhi. 8. Mathur D. S., *Mechanics*, S. Chand, 2012. 9. Mathur D.S., *Properties of Matter*, Shyamlal Charitable Trust, New Delhi. 10. Sears and Zeemansky, *University Physics*, Pearson Education.
Suggested equivalent online courses: 1. https://www.eshiksha.mp.gov.in/mpdhe/ Learning Management System, Department of higher education, Government of Madhya Pradesh (M.P.). 2. https://nptel.ac.in/courses/115/106/115106090/ Mechanics, Heat, Oscillations and Waves by Prof. V. Balakrishnan, Department of Physics, Indian Institute of Technology, Madras.

Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 30 Marks University Exam (UE): 70 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE): 30	Class Test Assignment/Presentation	30 Marks
External Assessment: University Exam Section: 70 Time: 03:00 Hours	Section(A): Very Short Questions (50 words each) Section (B): Short Questions (200 words each) Section (C): Long Questions (500 words each)	70 Marks
Total Marks		**100 Marks**

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Physics			
1	Course Code	M1-P	
2	Course Title	Fundamentals of Mechanics and Matter Lab (Paper 1)	
3	Course Type: (Core Course/ Elective/ Generic Elective Vocational)	Minor Course	
4	Pre-Requisite (if any)	To study this course the students must have the subject Physics in 12th Course.	
5	Course Learning Outcome (CLO)	After completing this course, students will be able to: 1. Measure Young's modules and modulus of rigidity using different methods. 2. Calculate acceleration due to gravity and moment of inertia, verifying related laws. 3. Measure viscosity and surface tension in liquids. 4. Determine the force constant of a spring and understand harmonic motion.	
6	Credit Value	1(Practical)	
7	Total Marks-100	Max. Marks: 30 +70	**Min. Passing Marks: 35**

Part B- Content of the Course		
Total No. of Lectures (in hours per week): 2 hours per week Total Lectures: 30 hours		
S. No.	**List of Experiments (Note: Any five of the experiments listed must be performed by students who have opted for Physics as their minor subject.)**	**No. of Practical (in Hours)**
1.	Determination of Young's modulus of material of a metallic bar by bending of beam method.	30
2.	Determination of acceleration due to gravity (g) using compound pendulum.	

3.	Determination of modulus of rigidity of a rod with the help of Barton's apparatus (Vertical/Horizontal).	
4.	Determination of coefficient of viscosity of liquid using Poiseuille's method.	
5.	Determination of the moment of inertia of a flywheel about its axis of rotation.	
6.	Verification of laws of the parallel/perpendicular axes of moment of inertia.	
7.	Determination of modulus of rigidity of material of a wire with the help of Maxwell's needle.	
8.	Determination of Young's modulus of a material of a rod using Cantilever method.	
9.	Determination of force constant of a spring.	
10.	I .ermination of surface tension of a liquid by Jaeger's method.	

Part C-Learning resources

Suggested readings:

1. Prakash I. & Ramakrishna, *A Textbook of Practical Physics*, Kitab Mahal, 2011, 11/e.
2. Squires G. L., *Practical Physics*, Cambridge University Press, 2015, 4/e.
3. Flint B. L. and Worsnop H. T., *Advanced Practical Physics for students*, Asia Publishing House, 197.
4. Chattopadhyay D. & Rakshit P. C., *An Advanced Course in Practical Physics*, New Central Book Agency.

Suggested digital platforms/web links:

1. https://www.vlab.co.in/broad-area-physical-sciences
2. https://storage.uocleanis.com/uniquecourses/online.html

Part D- Assessment and Evaluation

Suggested Continuous Evaluation methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz		Viva Voce on Practical	
Attendance		Practical Record File	
Assignments (Charts/ Model Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)		Table work/ Experiments	
Total			**100**

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Computer Science			
	Course Code	FOSC-MD	
	Course Title	Generic (TH): Cyber Security and Digital Hygiene	
	Course Type (Core Course/ Discipline Specific Elective)	Generic (Multidisciplinary)	
4	Pre-Requisite (if any)	This course does not assume prior knowledge and is suitable for students from all disciplines	
5	Course Learning Outcome (CLO)	On completion of this course, learners will be able to: • Understand (Level 2) the essentials of cybersecurity and digital hygiene. • Understand (Level 2) the concepts of cyber threats and data breaches and safe online practices. • Can recognize threats (Level 6) and respond appropriately. • Experiential learning (Level 4) through case studies. • Apply the knowledge (Level 6) for better and secure transactions over internet and can contribute in others in understanding the digital security awareness **Note:** Level of Bloom's Taxonomy is mentioned in the brackets.	
6	Credit Value	Theory- 03 Credits	
7	Total Marks-100	Max. Marks: 30 +70	**Minimum Passing Marks: 35**

Part B-Content of the Course		
No. of lectures (in Hours per week): 03 Hrs. per week (Semester); 1.5 Hrs. per week (Yearly)		
Total No. of Lectures: 45 Hrs.		
Unit	**Topics**	**No. Of Lectures**
I	**Introduction to Cyber Security:** • Definition, scope and importance of cybersecurity •Common cyber threats: phishing, malware, ransomware, social engineering	09

	• History and evolution of cyber threats • Cybersecurity in daily life (online shopping, banking, social media)	
II	**Digital Hygiene Practices:** Good practice for device and data protection • Strong password management and multi-factor authentication • Safe browsing habits and software updates • Avoiding harmful downloads and unauthorized links	09
III	**Legal and Ethical Aspects of Cybersecurity:** • Overview of Indian IT Act and relevant laws • Cybercrime reporting in India • Digital rights and responsibilities • Ethical use of digital content and resources	09
IV	**Cybersecurity tools and Software Awareness:** • Introduction to antivirus, firewalls, anti-malware tools • Browser extensions for safety (ad blockers, HTTPS Everywhere) • Safe use of public Wi-Fi and VPNs • Simple threat detection mechanisms	09
V	**Indian Knowledge System (IKS) and Digital Ethics:** • Ethical responsibility in digital behavior based on Indian philosophical traditions • Niti and Dharma in online conduct • Ancient Indian communication ethics and their relevance today • Data integrity and responsibility from Indian knowledge lens	09

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

1. V.K. Jain 'Cyber Security', BPB Publications
2. Saurabh Sharma - 'Cyber Security & Ethics', Khanna Publishing
3. B.R. Sharma - 'Information Security and Cyber Laws', PHI Learning

Web Resources:

1. Ministry of Home Affairs, Cyber Crime Portal: https://cybercrime.gov.in/
2. Information Security Education and Awareness (ISEA): https://www.isea.gov.in/
3. CERT-IN: https://www.cert-in.org.in/
4. Cybersecurity Awareness resources from NCIIPC: https://nciipc.gov.in/

16.7.25

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 30 Marks University Exam (UE): 70 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE): 30	Class Test Assignment/Presentation	30 Marks
External Assessment: University Exam Section: 70 Time: 03:00 Hours	Section(A): Objective Type Section (B): Short Questions Section (C): Long Questions	70 Marks
Total Marks		100 Marks

16.9.25

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Ability Enhancement Course (AEC)-प्रथम प्रश्न पत्र-हिन्दी भाषा और संस्कृति

भाग अ - परिचय

	कार्यक्रम : यू.जी. लेवल प्रमाण पत्र	**कक्षा: बी.ए./बी.कॉम / बी.एस.सी. / बी.एच.एससी. /बी.सी.ए/बी.बी.ए. (प्रथम वर्ष)**	**वर्ष 2025-26**
	विषय :-	Ability Enhancement Course (AEC)	
	पाठ्यक्रम कोड	FOSC-AEC	
	पाठ्यकम का शीर्षक: पाठ्यक्रम का प्रकार	हिन्दी भाषा और संस्कृति Ability Enhancement Course (AEC)	
	पाठ्यक्रम अपेक्षित	कक्षा 12 वीं उत्तीर्ण किसी भी विषय समूह से प्रमाण पत्र किया हो पात्र है।	
	पाठ्यक्रम अध्ययन की उपलब्धि (लर्निंग आउटकम) CLO	1. भारतीय ज्ञान परम्परा से विद्यार्थियों अवगत एवं लाभान्वित करवाना । 2. इस पाठ्यक्रम के अध्ययन से विद्यार्थी हिन्दी के प्रसिद्ध रचनाकारों एवं उनकी रचनाओं से परिचित हो सकेंगे । 3. पठित रचनाओं के माध्यम से विद्यार्थी देश की संस्कृति चेतना, संस्कार एवं राष्ट्रीय भावना से परिचित हो सकेगें । 4. व्याकरण एवं भाषा ज्ञान का बोध । 5. सामान्य शब्दावली और विशेष शब्दावली के अध्ययन द्वारा भाषा एवं संस्कृति बोध का विकास करना । 6. विशेष शब्दावली (बीज शब्द / की वर्ड) से परिचित करवाते हुए बोध के स्तर को विकसित करना । 7. प्रतियोगी परीक्षाओं हेतु तैयार करना।	

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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	क्रेडिट	02 क्रेडिट	
	कुल अंक	100 अंक	
	उत्तीर्ण अंक	35 अंक	

(भाग-ब) कोर्स सामग्री

व्याख्यान की कुल संख्या: वर्ष में अधिकतम 30 घंटे

	इकाई	विषय	व्याख्यान की संख्या
	इकाई - 01	1. भारतीय ज्ञान परम्परा- एक परिचय 2. भारतीय ज्ञान परम्परा में हिन्दी भाषा 3. महर्षि पाणिनि- जीवन व दर्शन गतिविधियाँ- भारतीय ज्ञान परम्परा पर आधारित पोस्टर सृजन भारतीय ज्ञान परम्परा से सवधित ग्रंथों / पुस्तकों का अवलोकन	6 घंटे
	इकाई - 02	1. मैथिलीशरण गुप्त- परिचय पाठ: मातृभूमि (कविता) 2. सूर्यकांत त्रिपाठी 'निराला- परिचय पाठ: भारत वंदना (कविता) 3. प्रेमचन्द- परिचय पाठ: शतरंज के खिलाडी (कहानी) गतिविधियाँ- कविता का सस्वर वाचन कहानी वाचन	6 घंटे
	इकाई - 03	1. वैचारिक भारतीय भाषाओं में राम 2. आचार्य रामचन्द्र शुक्ल- परिचय पाठ : उत्साह (आवमूलक निबन्ध) 3. रामधारी सिंह दिनकर- परिचय पाठ : भारत एक है (संस्कृति) लेख 4. शरद जोशी- परिचय पाठ :- अफसर (व्यंग्य) गतिविधियाँ-	6 घंटे

		निबंध लेखन का अभ्यास भारतीय संस्कृति पर आलेख लेखन	
	इकाई - 04	हिन्दी व्याकरण 1. शब्द रचना : उपसर्ग एवं प्रत्यय 2. शब्द प्रकार : तत्सम, तद्भव, देशज, विदेशी, संकर नव निर्मित शब्द 3. पर्यायवाची, विलोमार्थी, अनेक शब्द के लिए एक शब्द गतिविधियाँ- शब्द रचना संबंधी समूह चर्चा देशज-विदेशी शब्द सूची बनाना	6 घंटे
	इकाई - 05	हिन्दी व्याकरण 1. हिन्दी के प्रमुख विराम चिह्न 2. संक्षेपण बीज शब्द धर्म, अद्वैत, भाषा, अवधारणा गतिविधियाँ- अनुच्छेद / श्रुतलेख के माध्यम से विराम चिह्नो का अभ्यास 3. संक्षेपण का अभ्यास	6 घंटे
	सार विन्दु (की वर्ड) / टैग		
	सर्च करे		
	मैथिलीशरण गुप्त :	मैथिलीशरण गुप्त की कविता- मातृभूमि	
	सूर्यकान्त त्रिपाठी निरालाः भारत वंदना	सूर्यकान्त त्रिपाठी निरालाः भारत वंदना	
	प्रेमचन्द	प्रेमचन्द शतरंज के खिलाडी	
	रामधारी सिंह दिनकर	भारत एक है	
	आचार्य रामचन्द्र	उत्साह निबन्ध	

	शुक्ल		
	भारतीय ज्ञान परम्परा	भारतीय ज्ञान परम्परा और हिन्दी भाषा	
	धर्म क्या है?		
	शब्द रचना, शब्द प्रकार पर्यायवाची शब्द		
	विलोम शब्द अनेक शब्द के लिए एक शब्द		
	विराम चिह्न		
	संक्षेपण		

भाग - स		
अनुशंसित अध्ययन संसाधन		
पाठ्य पुस्तके, सन्दर्भ पुस्तकें अन्य संसाधन		
1.	प्रेमचन्द्र मानसरोवर खंड- 3	
2.	आचार्य रामचन्द्र शुक्ल चिन्तामणि भाग -1	
3.	शरद जोशी "कहा जाता है (व्यंग्य संग्रह)	
4.	डॉ. वासुदेव नन्दन प्रसाद आधुनिक हिन्दी व्याकरण और रचना, भारती भवन, ठाकुर बाडी रोड, पटना बिहार	
5.	डॉ. राजेश्वर चतुर्वेदी हिन्दी व्याकरण उपकार प्रकाशन .. आगरा उ.प्र.	
6.	भारतीय ज्ञान परम्परा विविध आयाम सम्पादक प्रो. सरोज शर्मा, शिप्रा प्रकाशन नई दिल्ली	
7.	प्राचीन भारतीय ज्ञान परम्परा लेखक - डॉ. अश्विन कुमार राठौर, श्री सॉईनाथ, प्रकाशन- नागपुर प्रकाशक	
8.	हिन्दी ज्ञान कोश	
9.	इन्टरनेट सामग्री टैग में उल्लेखित	

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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भाग - द		
अनुशंसित मूल्यांकन विधि		
आंकलन अनुभाग विश्वविद्यालय परीक्षा समय- 2 घण्टे	(अ) तीन अतिलघु प्रश्न (प्रत्येक 50 शब्द) (ब) चार लघु प्रश्न (प्रत्येक 200 शब्द) (स) दो दीर्घ प्रश्न (प्रत्येक 500 शब्द)	03 X 04=12 04 X 13 =52 02 X 18=36
		कुल अंक- 100

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Part A Introduction			
Program: Certificate	**Class: B.A./ B.Sc./ B.Com.**	**Year: I**	**Session: 2025-26**
Subject: Medicinal Plants			
1	Course Code	FOSC-V/SEC-T	
2	Course Title	Medicinal Plants	
3	Course Type (Core Course/ Discipline Specific Elective)	Vocational/Skill Enhancement Course	
4	Pre-Requisite (if any)	12th pass in any stream. This course can be opted by the students of any stream.	
5	Course Learning Outcome (CLO)	After studying this Course. the students will be able to understand: • The utility of plants as medicines. • The preparation of basic herbal medicinal products, • The idea of traditional cultivation and harvesting practices, • The storage, packaging and marketing of herbal medicines, • To work with individual plant and their products.	
	Expected Job Role/ career opportunities	Students will be able to:- • Start processing units of locally available medicinal plant products, • Cultivate the medicinal plants. • Get employment opportunities in area of health services as community services, rural health services and NGO related with health awareness etc.. • Set up a venture of nursery of medicinal plants. • Start sales and marketing of herbal medicines	
6	Credit Value	Theory 2 credits+ practical 01 credit	
7	Total Marks	Max. Marks: 100	**Min. Passing Marks: 35**

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Part B-Content of the Course		
Total No. of Lectures (in hours per week): 30 hours		
Unit	**Topics**	**No. Of Lectures**
I	**General aspects of Medicinal plants and Bharteey Gyan Parampara-** 1.1 Definition, History in Indian context, present and future needs (prospects). 1.2 Introduction of plant parts (roots, stem, leaves, fruit, seeds and their modifications). Panchang (5 parts of plants) usage in ayurveda 1.3 Indian traditional and modern practices of cultivation and harvesting 1.3 Processing and storage practices and Marketing of medicinal products. 1.4 Precautions and ethical use of herbs in Indian tradition /Sustainable use of herbal medicinal plants Activities- Discussion on "Modern vs Traditional Medicine"/ market survey of medicinal plants in weekly haats and local shops Herbal products making workshop	10
II	**Important Indian Medicinal Plants (Part-01)** **1.1 Plant parts used as Powder (Churna):** Identification and utilization of Amla (Embellica officinalis). Bahera (Terminalia bellerica), Harad (Terminalia chebula), Turmeric (Curcuma longa), Cinnamon (Cinnamomum verum), Sarpgandha (Rauvolia serpentina), Black pepper (Piper nigram), Ashwagandha (Withania sominifera), **1.2 Plant parts used as juice/decoction(Swarasa/ Kwatha):** Identification and utilization of Amla (Embellica officinalis), Ginger (Zingiber officinale), Basil (Oscimum sanctum), Arjun (Terminalia arjuna), Gwarpatha (Aloe vera), Giloy (Tinospora cordifolia), Bael (Aegle marmelos) **Activity**: Preparation of posters and leaflets on benefits of Indian medicinal plants/ conduct an awareness program in the institute /herbal first aid box preparation with herbal alternatives (e.g. turmeric for wounds, tulsi syrup for cold, Aloe Vera gel for burns)/ College level herbal trade fair/ exhibition	10
III	**Important Indian Medicinal Plants (Part -02)** **1.1 Plant parts used as lotion/ointment (Lepa):** Identification and utilization of Gwarpatha (Aloe vera), Fenugreek (Trigonella foenum-graecum), Pot marigold (Calendula officinalis). Neem (Azadirachta indica). **1.2 Plant parts used as oil (Tail):** Clove (Syzygium aromaticum), Neem (Azadirachta indica), Coconut (Coccus nucifera), Nilgiri (Eucalyptus sp.). **1.3 Plant parts used as surgical fibre, sutures and dressings**: Identification and utilization of Cotton (Gossypium sp.), Jute (Corchorus capsularis), Banana (Musa sp.), **1.4 Plant parts used as poultice(Upanaha Sweda):** Identification and utilization of Turmeric (Curcuma longa), Aak (Calotropis sp.). **Activities**-Study about herbal medicinal Entrepreneurs Short film or documentary- for example "medicial plants in Indian home" /"Herbal home	10

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VIKRAM UNIVERSITY, UJJAIN (M.P.)

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	remedies", "careers in medicinal plant industry", "herbal medicine vs modernmedicine a comparative study"/ Medicinal plant quiz competition. Discussion on ancient surgical practices by Sushrut using herbal sutures and disinfectants/Study of medicinal plants in Sanskrit language.	

Key words/Tags: Medicinal plants, Plant based medicines in Bharteey Gyan Parampara

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Pan la H., Hand Book on Ayurvedic Medicines, National Institute of Industrial Research, Delhi
2. CSI - Cultivation and Utilization of Medicinal Plants
3. Bra thvarchas, Ayurved ka Pran: Vanoshdhi Vigyan, Vedmata Gayatri Trust, Shantikunj Haridwar, 2004,
4. Cha dhry R.D., Herbal Drug Industry, Eastern Publication
5. Atal nd Kapur, Cultivation and utilization of Medicinal Plants, RRL JammuTawi, 1982
6. Rapl l Ikan, Natural Products: A Lab Guide, Academic Press, 1991,2nd edition
7. Dutt, Ashwin, An Introduction to Medicinal Plants, Adhyayan Publishers and Distributers, 2009, 1sl edit n

Web Resources**

* [https: /www.ayush.gov.in](https:www.ayush.gov.in)
* [https: /www.nmpb.nic.in](https:www.nmpb.nic.in)
* [https: /cimap.res.in](https://cimap.res.in)
* YouTube: "AYUSH Ministry"Krishi Jagran", "Bharatiya Gyan Parampara Series"

Suggested equivalent online courses: SWAYAM, NPTEL courses and MOOC

Part D-Assessment and Evaluation

Maximum Marks: 100	
External Assessment:	
University Exam Section: 1	
Time: 02.00 Hours	

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Syllabus of Practical Paper

Part A Introduction			
Program: Certificate	**Class: B.A./ B.Sc./ B.Com.**	**Year: I**	**Session: 2025-26**
Subject: Medicinal Plants			
1	Course Code	FOSC-V/SEC-P	
2	Course Title	Medicinal Plants	
3	Course Type	Skill development course	
4	Pre-Requisite (if any)	This course can be opted by the students who have passed 12th of any stream	
5	Course Learning Outcome (CLO)	On completion of this course, the students will be able to: 1. Identify medicinal plants. 2. Understand importance of plant-based medicines. 3. To gain the skills required for the preparation and manufacture of commonly used plant-based health products.	
6	Credit Value	01	
7	Total Marks	Max. Marks: 100	**Min. Passing Marks: 35**

Part B- Content of the Course		
Total No. of Lectures-Tutorials-Practical (in hours per week): 30 L-T-P:		
Unit	**Topics**	**No. of Lectures**
01	1. Identification of locally available common medicinal plants. 2. Basic preparations of herbal products as Powder (Churna), juice/decoction (Swarasa/ Kwatha). lotion/ointment (Lepa), oil (Tail), surgical fibre, sutures and dressings, poultice(Upanaha Sweda), 3. Basic preparations of herbal products as Trifla,. Amla candy, Herbal tea etc. 4. Study and documentation of commercial production of at least 5 medicinal plants. (Using websites / YouTube/local cottage industry) 5.Submission of digital Photo album of at least 10 medicinal plants with brief description, 6.Cultivation, maintenance and reporting of at least 5 medicinal plants within college campus.	

	7. Educational visit to herbal medicine factory / small processing unit/ medicinal agriculture field and submission of visit report. (At least 01)	

Keywords/Tags: Herbal Products, commertial production

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Panda H.,Hand Book on Ayurvedic Medicines, National Institute of Industrial Research, Delhi 7 2. CSIR- Cultivation and Utilization of Medicinal Plants
3. Bramhvarchas, Ayurved ka Pran: VanoshdhiVigyan,Vedmata Gayatri Trust, Shantikunj Haridwar, 2004,
4. Chaudhry R.D., Herbal Drug Industry, Eastern Publication
5. Atal and Kapur, Cultivation and utilization of Medicinal Plants, RRL JammuTawi, 1982
6. Raphel Ikan, Natural Products: A Lab Guide, Academic Press.1991.2nd edition.
7. DutAshwin ,An Introduction to Medicinal Plants, Adhyayan Publishers and Distributers, 2009, 1st edition

Web Resources** ** https://www.ayush.gov.in https://www.nmpb.nic.in https://cimap.res.in YouTube: "AYUSH Ministry", "Krishi Jagran", "Bharatiya Gyan Parampara Series"

Suggested equivalent online courses: SWAYAM, NPTEL courses and MOOC

Part D-Assessment and Evaluation

Suggested Evaluation Methods:

	External evaluation	Marks
	Practical External Evaluation	100

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B.Sc. (Hons.) FORENSIC SCIENCE

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W.e.f. Session 2025–2026
Credit Distribution Overview
SEMESTER – II (CREDITS 20)

S. No.	Paper code	Course Component and Name of paper	Credit			Marks		Total Marks
			T	P	Total	Max. Int.	Max. Ext.	
1.	C-2 FOSC-2T	Core-II Crime Scene Management	4		6	30	70	100
2.	C-2 FOSC-2P	Crime Scene Management (Practical paper 2)		2		30	70	100
3.	C-3 FOSC-3T	Core III Questioned Documents & Computer Forensic	4		6	30	70	100
4.	C-3 FOSC-3P	Documents Examination (Practical Paper 3)		2		30	70	100
5.	MC1-T/M2-T	Minor - (Chemistry) - Fundamental Organic Chemistry / (Physics) - Thermodynamics (Theory)	3		4	30	70	100
6.	MC1-P/M2-P	Practical - Basic Organic Chemistry / Practical-Thermodynamics		1		30	70	100
7.	FOSC-AEC	AEC: English Language and Indian Culture	2		2	30	70	100
8.	FOSC-VAC	VAC: Understanding India	2		2	30	70	100
		Total Credits and Marks			20			800

**Abbreviations Used- Core (Major), Minor, MD: Multi/Inter-Disciplinary, AEC: Ability Enhancement, SEC: Skill Enhancement, DSE: Discipline Specific Elective, VOC: Vocational Course, VAC: Value Added Course.*

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B.Sc. (Hons.) FORENSIC SCIENCE

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Part A Introduction			
Program: Certificate	Class: B.Sc.	Year: I	Session: 2025-26
Subject: Forensic Science			
1	Course Code	C-2 FOSC-2T	
2	Course Title	Crime Scene Management (Core Paper II)	
3	Course Type (Core Course/ Discipline Specific Elective)	Core Course	
4	Pre-Requisite (if any)	To study this course a student must be from Maths/Biology/ Science background in 12th Class.	
5	Course Learning Outcome (CLO)	On successful completion of this course, the students will be able to: 1. To enhance the skill in complete management of crime scenes like documentation, collection of and preservation of evidence, different searching methods of evidence and role played by the investigating officer during crime scene management. 2. Understanding about crime scene investigation and its management legal procedures to make decisions related to investigative techniques techniques, analysis of evidence, and courtroom testimony, develop ability to conduct interviews and interrogations.	
6	Credit Value	4	
7	Total Marks-100	Max. Marks: 30 +70	Min. Passing Marks: 35

Part B-Content of the Course

Total No. Of Lectures-Tutorial-Practical (in hours per week): L-T-P:

Unit	Topics	No. Of Lectures
I	Crime Scene Management: Introduction to Crime Scene, Definition of crime, Classification of crime scenes: Primary, Secondary, Indoor, Outdoor, Macroscopic and Microscopic, other Specific type of Crime Scene. Classification based on manners of crime: homicide, suicide, accidental. Role of the First Responding Officer (First Officer at the Scene, Recording the Time, Assisting the Victim, Search for and Apprehension of Accused, Securing the Crime Scene), Initial Crime Scene Response, Crime Scene Communication, Securing and	15

	Isolating the Crime Scene.	
II	Crime Scene Procedure: Role of Forensic Scientist at Scene of Crime, Identification of Physical Evidence in Criminal Investigation, Assisting Investigating Officer in Crime Scene Management, Legal Implications for Crime Scene Searches. Plan of Action, Note Taking, Crime Scene Search, Crime Scene Photography, Types of Cameras, Types of Media, Number of Photographs, Admissibility of Photographs, Videography of the Crime Scene.	10
III	Sketching of Scene of Crime: Importance of Sketching of Scene of Crime, Essential Ingredients for Sketching of Scene of Crime, Locating Objects in the Sketch, Procedure of Sketching: An Indoor Scene of Crime, an Outdoor Scene of Crime, Admissibility of Sketches, Comparison of Sketching and Photography.	10
IV	Crime: Definition aims and scope of crime. Elements, nature, causes and consequences of crime. Deviant behavior, hate crimes, organized crimes and public disorder, domestic violence and workplace violence. Victimology, juvenile delinquency, social change and crime. Psychological disorders and criminality, situational crime prevention.	10
V	Police Organization and FIR: State Police Forces, State armed police forces, home guards, Traffic Police, CID, STF, community policing. Central armed police forces: BSF, CRPF, CISF, ITBBP, NSG, Assam Rifle, Central Investigation: CBI, IB, NIA, RAW, Narcotic Control Bureau, National Police Academy. BPR&D, NCRB - Research & Training etc. Investigation: FIR, case diary, Interrogation of suspects, Interview of witness, cognizable and non-cognizable offences, compoundable and non-compoundable and non-cognizable offences. Police custody & judicial custody, bailable and non-bailable offences, procedure of filing charge sheet.	15

Keywords: Crime, Victim, Deviant behavior, Microscopic, Communication, Crime procedure, Photography, Videography, Crime, Indoor Scene, Sketches, Photography, Crime, Violence, Deviant behavior, Juvenile Delinquency, Psychological Disorders, Police organization, Central and State Police, Case dairy, Police Custody.

Part C-Learning Resources

Textbooks, Reference Books, Other resources

1. Aitken C.G.G. and Stoney D.A. (1991). The use of Statistics in Forensic Science. England, Ellis Harwood Limited.
2. Horswell J. (2016). The Practice of Crime Scene Investigation. USA, CRC Press.
3. James S.H. (2014). Forensic Science: An Introduction to Scientific and Investigative Techniques. UK, Taylor & Francis.
4. James, S.H. and Nordby J.J. (2003). Forensic Science; an Introduction to Scientific and Investigative Techniques. USA, CRC Press.
5. O' Hara & Osterberg (1949). An Introduction to Criminalistics. New York, The Macmillan Company.
6. Saferstein R. (1995). Criminalistics - An Introduction to Forensic Science. USA, Prentice hali Inc.
7. Sharma B. R. (2003). Forensic Science in Criminal Investigation and Trials. India, Universal Law Publishing Company.
8. Sharma J. D.(1988). Vidhivigyan Avem Vish Vigyan. India, Madhya Pradesh Hindi Granth Academy. 9. Sharma J. D. (2011). Apradhon ka Vigyanik Anveshan. India, Madhya Pradesh Hindi Granth Academy.

Suggested Readings:
1. BurkeR.H.(2013). An Introduction to Criminological Theory. USA, Routledge.
2. Criminal Procedure Code.
3. Indian Evidence Act.
4. Indian Penal Code.
5. Nordby J. (1999). Dead Reckoning - The Art of Forensic Science Detection. USA, CRC Pre...
6. Unnithan N. P. (2013). Crime and Justice in India. India: SAGE Pub. India.

Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 30 Marks University Exam (UE): 70 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Three must be written tests and the fourth may be written test/quiz/seminar/assignment. The best three test out of four will be awarded to the student.	30
External Assessment: University Exam Section Time: 03.00 Hours	**Section(A):** Very Short Questions **Section (B):** Short Questions **Section (C):** Long Questions	70

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Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Forensic Science			
1	Course Code	C-2 FOSC-2P	
2	Course Title	Crime Scene Management (Practical paper 2)	
3	Course Type: (Core Course/ Elective/ Generic Elective Vocational)	Core Course	
4	Pre-Requisite (if any)	To study this course a student must be from Maths/Biology/Science background in 12th Class.	
5	Course Learning Outcome (CLO)	Learning Objectives: After studying this paper the students will know a. About crime scene and its preservation. b. Crime scene documentation procedures. c. Different methods used for sketching of crime scene. d. Different methods used for sketching of crime scene. e. Gaining hands on training will help the students to handle real crime scene and crime investigation.	
6	Credit Value	2	
7	Total Marks-100	Max. Marks: 30 +70	**Minimum Passing Marks: 35**

Part B- Content of the Course		
Total No. of Lectures (in hours per week): 2 hours per week **Total Lectures: 30 hours**		
S. No.	**Topics**	**No. of Lecture**
1.	Demonstration of crime scene management	
2.	Rough and final sketch of scene of crime	
3.	Photography of scene of crime through digital camera	
4.	Zonal method for searching of physical evidence at scene of crime	
5.	Spiral method for searching of physical evidence at scene of crime	
6.	Grid and strip method for searching of physical evidence at scene of crime	

7.	Wheel method for searching of physical evidence at scene of crime	
8.	Line method for searching of physical evidence at scene of crime	
9.	Sketching of outdoor scene of crime of homicide and suicide	
10.	Sketching of outdoor scene of crime of accidental case	
11.	Sketching of indoor scene of crime of theft, dacoity and robbery	
12.	Sketching of indoor scene of crime of suicide and murder	

Part C-Learning resources

Suggested readings:

1. James S.H. (2014). Forensic Science: An Introduction to Scientific and Investigative Techniques. New York, Taylor & Francis.
2. Saferstein R. (1995). Criminalistics - An Introduction to Forensic Science. USA, Prentice Hall Inc.
3. Sharma B.R. (2003). Forensic Science in Criminal Investigation and Trials. India, Universal Law House.
4. Sharma J.D. (2011). Apradhon ka Vigyanik Anveshan. India, Madhya Pradesh Hindi Granth Academy.

Suggested Equivalent online courses:

Part D- Assessment and Evaluation

Suggested Evaluation methods:

		External Assessment	Marks
		Viva Voce on Practical	20
		Practical Record File	20
		Table work/ Experiments	60
TOTAL			**100**

Assignments:

1. Drawing of rough sketch of indoor/outdoor scene of crime
2. Drawing of final sketch of indoor/outdoor scene of crime
3. Photography of the given scene of crime
4. Searching and labelling of physical evidence at scene of crime

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Part A Introduction			
Program: Certificate	Class: B.Sc.	Year: I	Session: 2025-26
	Subject: Forensic Science		
1	Course Code	C-3 FOSC-3T	
2	Course Title	Questioned Documents & Computer Forensic (Core Paper III)	
3	Course Type (Core Course/ Discipline Specific Elective)	Core Course (Theory)	
4	Pre-Requisite (if any)	To study this course a student must be from Maths/Biology/ Science background in 12th Class.	
5	Course Learning Outcome (CLO)	On successful completion of this course, the students will be able to: 1. To gain knowledge about nature & scope, tools in questioned documents, comparison of handwriting and questioned documents & forgeries. 2. Understanding about collection, handling and preservation of questioned documents, basic tools for forensic document examination: alterations in documents; charred documents; and examination.	
6	Credit Value	4	
7	Total Marks-100	Max. Marks: 30 +70	**Min. Passing Marks: 35**

Part B-Content of the Course

Total No. Of Lectures-Tutorial-Practical (in hours per week): L-T-P:

Unit	Topics	No. Of Lectures
I	**Nature and Scope of Questioned Documents:** Definition of Questioned Document, Types of Questioned Document, Preliminary Examination of Questioned Document. Government Examiner of Questioned Document (GEQD). Basic Tools Needed for Forensic Document Examination- Photomicrography, Microphotography, Visible Spectral Comparator, Electrostatic Detection Apparatus. Ultraviolet, Visible, Infrared, and Fluorescence Spectroscopy, Determining the Age and Relative Age of Documents.	15
II	**Comparison of Questioned Document**: Handwriting: Definition, Handwriting	10

	Characteristics, Class & Individual Characteristics, Comparison of Handwriting, Natural Variations, and Fundamental Divergences in Handwriting. Standards for comparison of Handwriting; Requested standards, Collected or Admitted standards, their merits and demerits, source for collecting admitted standards, comparison of Paper, Ink, Printed Documents typed documents, photocopied documents.	
III	**Forgeries:** Alterations in Documents, Including Erasures, Additions, Over-Writing, and Obliterations. Indented and Invisible Writings. Charred Documents. Examination of Counterfeit Indian Currency Notes, Passports, VISA and Stamp Pads. Disguised writing and anonymous letters.	10
IV	**Computer Forensic Part-I:** Basic introduction to computers, hardware and accessories, operating system and software. Computers and networking: concept of network security and cyber-crime investigation. Basic of security planning: multi layered security, intrusion triangle, removing intrusion opportunities, importance of physical security, protecting server, workstation and network devices, protection of removable storage disks.	15
V	**Computer Forensic Part-II:** Cyber-crime, Breaching security and operation of digital systems. Types of computer crimes: on internet, hacking, computer stalking, virus, worms, cookies, obscenity and pornography, crimes related to intellectual property rights, computer terrorism, hate speech. Private and national security in cyber space, program manipulation. Software piracy. Encryption and decryption methods. Cryptography and steganography. Relevant section of Information technology Act 2000.	10

Keywords: Questioned Documents, Photomicrography, Spectral comparator, Microphotography, Handwriting, Ink Examination, Printed Documents, Crime procedure, Photography, Videography, Forgeries, Personal Documents, Counterfeit, currency notes, Charred Documents, Network security, cybercrimes, data recovery, multi layered security, Cryptography, hacking, software piracy, Encryption and decryption.

Part C-Learning Resources

Textbooks, Reference Books, Other resources

Essential Reading:

1. Hardless H.R. (1988). Disputed Documents, handwriting and thumbs - print identification, profusely illustrated. India, Law Book Co.
2. Osborn A.S. (1929): Questioned Documents.
3. Hilton O. (1984): Scientific Examination of Questioned Documents, Elsevier Science Publishing co. New York.
4. Kelly J.S. and Lindblom B.S. (2006): Scientific Examination of Questioned Documents, Tylor and Francies, New York.
5. Harrison W.R. (1996): Suspected Documents, their Scientific Examination, Universal Book Traders. 6. Ellen D (2006): The Scientific Examination of Documents, Methods and Techniques, Tylor and Francis.

Suggested Readings:

1. Nordby James, S.H. & J.J. (2003): Forensic Science: An Introduction to Scientific and Investigative Techniques. USA, CRC Press.
2. O'Hara & Osterberg (1949): An Introduction to Criminalistics. New York, The Macmillan Company.
3. Nickolls, L.C. (1956): Scientific Investigation of Crime. London. Bulterwest.

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Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 30 Marks University Exam (UE): 70 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Three must be written tests and the fourth may be written test/quiz/seminar/assignment. The best three test out of four will be awarded to the student.	30
External Assessment: University Exam Section Time: 03.00 Hours	**Section(A):** Very Short Questions **Section (B):** Short Questions **Section (C):** Long Questions	70

Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Forensic Science			
1	Course Code	C-3 FOSC-3P	
2	Course Title	Documents Examination (Practical Paper 3)	
3	Course Type: (Core Course/ Elective/ Generic Elective Vocational)	Core Course (Practical)	
4	Pre-Requisite (if any)	To study this course a student must be from Maths/Biology/Science background in 12th Class.	
5	Course Learning Outcome (CLO)	Learning Objectives: After studying this paper, the students will know a. Examination of questioned documents. b. Detection of handwriting in different cases. c. Method for detection of secret writing. d. Computer in crime detection and security issues. e. Gaining hands on training will help the students to handle real cases related to forged documents and cybercrime.	
6	Credit Value	2	
7	Total Marks:100	Max. Marks: 100	**Minimum Passing Marks: 35**

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Part B- Content of the Course		
Total No. of Lectures (in hours per week): 2 hours per week Total Lectures: 60 hours		
S. No.	**Topics**	**No. of Lecture**
1.	Examination of various ink samples using planer chromatographic techniques.	
2.	Decipherment of secret, erased, obliterated, indented handwriting using physical/chemical methods.	
3.	Study handwriting on different surfaces.	
4.	Handling and preserving of charred documents.	
5.	Matching handwriting and signatures (genuine/forged).	
6.	Examination of type written and printer generated prints.	
7.	Introduction of computer, accessories & operating systems	
8.	Collection and handling of digital evidence.	
9.	Network analysis for security purposes.	
10.	Study of computer forensics and cybercrime investigations being used by developed Nations like USA, UK and comparison with India.	
11.	Securing a windows server network	
12.	Analysis of external device	

Part C-Learning resources

Suggested readings:

1. Harrison W. R. (1997). Suspect Documents Their Scientific Examination. Delhi, Universal Law Publishing.
2. Hilton O. (1982). Scientific Examination of Questioned Documents. NY, Elsevier.
3. James S. H. (2014). Forensic Science: An Introduction to Scientific and Investigative Techniques. USA. Taylor & Francis Group.
4. Kelly J. S. & Lindblom B. S. (2006). Scientific Examination of Questioned Documents. NY, CRC Press.
5. Bayuk J. (2010). Cyber Forensics: Understanding Information Security Investigations. Springer. NY.
6. Santanam R. Sethumadhawan M. (2010). Cyber Security, Cyber Crime and Cyber Information Forensics: Applications and Cyber Forensics: Applications and Perspectives. NY. Science Reference.
7. Nelson B. Philips A., Steuart C. (2014). Guide to Computer Forensics and Investigations. US. Cengage Learning.

Suggestive digital platform courses:

https://www.youtube.com/watch?v=pM8yX-cr6S8

Suggested Equivalent online courses:

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VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Part D- Assessment and Evaluation

Suggested Evaluation methods:

		External Assessment	Marks
		Viva Voce on Practical	20
		Practical Record File	20
		Table work/ Experiments	60
TOTAL			**100**

Assignments:

Recording of own 10-digit fingerprint
Primary classification from 10-digit fingerprint card
To perform ridge tracing and ridge counting from the given fingerprint
Estimation of height/sex form given bone
Draw the given human bone with proper labelling
Analysis of given bite mark for the purpose of identification
Packing/labelling and forwarding of given forensic evidence

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B.Sc. (Hons.) FORENSIC SCIENCE

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CBCS Annual Pattern
B.Sc. Ist year
CHEMISTRY– Minor-I
Syllabus of Theory Paper

Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Chemistry			
1	Course Code	MC1-T	
2	Course Title	Fundamental Organic Chemistry	
3	Course Type: (Core Course/ Elective/ Generic Elective Vocational)	Minor 1	
4	Pre-Requisite (if any)	To study this course the students must have the subject Chemistry in 12th Course or equivalent	
5	Course Learning Outcome (CLO)	After completing this course, the student will be able to – 1. Explain Bharatiya Traditional Knowledge of Chemistry in Post vedic period 2. Explain Structure and bonding in organic molecules 3. Explain Mechanism of different organic reactions 4. Explain Stereochemistry of organic compounds 5. Explain preparation properties and structures of alkanes, cycloalkanes, alkenes and alkynes	
6	Credit Value	03	
7	Total Marks-100	Max. Marks: 30 +70	**Min. Passing Marks: 35**

Part B- Content of the Course		
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P:		
Unit	Topics	**No. of Lectures**
Unit 1	**Bharatiya Traditional Knowledge of Chemistry in Post vedic period** Samkhya, Bhratsamhita, Nyaya and Vaisesikha of Varahmihira, Sushrut sahinta, Rasashala, tradition of chemicals in Time of Charak and Sushrut. Sankhya-	9

	Patanjali System, Evolution of Different forms of Matter from the Vedantic view, The Atomic theory of the Buddhists and Jains.	
Unit 2	**Structure and bonding-** Hybridization, shapes of methane, ethane, ethylene, and acetylene. Vanderwall interaction, electronic displacement- mesomeric effect, resonance, hyperconjugation, aromaticity, inductive effect. Hydrogen bonding in organic compounds with the special reference to alcohol, phenols, amines and its consequences, dipole moment, organic acids and bases, their relative strength with emphasis on factors affecting pka value.	9
Unit 3	**Mechanism of organic reactions-** Homolytic and heterolytic bond fission with suitable examples, types of reagents-electrophiles and nucleophiles, types of reactions and their mechanism-addition elimination and substitution, types, shapes and relative stabilities of reactive intermediates- carbocation, carbanion, free radicals, carbenes, nitrenes.	9
Unit 4	**Stereochemistry of organic compounds-** Concept of isomerism, types of isomerism, structural isomerism, stereo isomerism, optical isomerism, elements of symmetry, molecular chirality, enantiomers, optical activity, example of optical isomerism, chiral and achiral molecules, diastereo isomers, threo and erythro isomers, resolution of enantiomers, inversion and retention, geometrical isomerism, E-Z nomenclature, confirmational isomerism, Newman projection, Sawhorse projection, Flying wedge formula, Fischer projection, confirmation of ethane, butane and cyclohexane	9
Unit 5	Alkanes Open chain and close chain compounds, functional groups, homologous series, classification of aliphatic compounds, nomenclature of aliphatic compounds, IUPAC nomenclature of alkanes, isomerism in alkanes, methods of synthesis - Wurtz synthesis, Kolbe synthesis, Grignard reagent, physical and chemical properties **Cycloalkanes-** nomenclature, Bayer strain theory, relative stability of rings, concept of stainless rings. **Alkenes-** nomenclature, methods of preparation: dehydration of alcohols, dehydrohalogenation of alkyl halides, Saytzeff rule, Hofmann rule, properties of alkene: addition of halogen (electrophilic, free radical, Markovnikov rule), ozonization, polymerization **Alkynes-** nomenclature, methods of preparation, structure, chemical reactions: electrophilic addition, nucleophilic addition, ozonisation, oxidation, acidic nature, polymerization and isomerization	9

Activities:

1. Extraction of Tulsi, Neem, Amla, Haldi
2. Gather data on the processes used to purify zinc both historically and currently.
3. Gather images and records pertaining to the history of two rust resistant monuments built in India.
4. Gather information about traditional Indian cosmetics knowledge and traditional Indian drug knowledge
5. Collection of Medicinal plants and their uses from nearby area (Herbarium Preparation)
6. Chart preparation of Ancient Indian Scientist in Chemistry and their contribution

7. Field study of BKS in nearby area
8. Educational Tour of Industries and Research Institutes
9. Prepare the Project and Modals related to Ancient Indian Chemistry

Part C-Learning Resources
Textbooks, Reference Books, Other resources
Suggested Readings: 1. History of Chemistry in ancient and Medieval India: Incorporating the History of Hindu Chemistry, 2014 by Ray Prafulla Charndra Acharya, ISBN-10 8121801540, Publisher Chowkhamba Krishnadas Academy 2. Chemistry and Chemical Techniques in India, Author: B. V. Subbarayappa, Publisher: Centre for Studies in Civilizations, Edition:2004, ISBN:818758601X 3. Chemistry and Chemical Techniques in India: Vol 4 Part 1 (History of Science, Philosophy and Culture in Indian Civilization) 1 January 1999, by B. V. Subbarayappa (Editor), ISBN-10 818758601X, Publisher Centre for Studies in Civilisations 4. Dinesh Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons for B.Sc. - 1 (CHEM 101TH) 1 January 2020 by P.N.Kapil (Author), Publisher S. Dinesh & Co. 5. Structure and Bonding, Steven Farmer & Dietmar Kennepohl University of Illinois Springfield, Libre text chemistry, 6. Basics of Organic Chemistry A Textbook for Undergraduate Students, Author: Anshul Bansal, ISBN: 978-981-5223-23-1 (Print) ISBN: 978-981-5223-22-4 (Online) Year of Publication: 2024 7. March's Advanced Organic Chemistry: Reactions, Mechanisms, and Structure, 8th Edition, Michael B. Smith, ISBN: 978-1-119-37180-9. March 2020, Wiley 8. Modern Methods of Organic Synthesis (4th Edition) 4th Edition, by W. Carruthers (Author), Iain Coldham (Author), ISBN-10 0521778301, Publisher Cambridge University Press 9. REACTION MECHANISM IN ORGANIC CHEMISTRY Paperback – 28 June 2016, by Subrata Sen Gupta (Author), SBN-10 019945681X, Publisher Oxford University Press 10. Stereochemistry of Organic Compounds Hardcover – 6 September 1994, by Ernest L. Eliel (Author), Samuel H. Wilen (Author), ISBN-10 0471016705, Publisher Wiley-Interscience, Edition 1st 11. NASIPURI D_STEREOCHEMISTRY OF 4ED (499) by D. Nasipuri | 1 October 2020, Stereochemistry of Organic Compounds: Principles and Applications by D. Nasipuri | 7 January 2018, Newage International pvt, ltd 12. Stereochemistry of Organic Compounds, Ernest L. Eliel, Samuel H. Wilen, Lewis N. Mander, Wiley, 28 Sept 1994 13. Organic Chemistry: Hydrocarbons Hardcover – 1 December 2007 by Dr M S Yadav (Author), ISBN-10 8189741365, Publisher SBS Publishers 14. Hydrocarbons (Alkanes, Alkenes and Alkynes), Amit Arora, Discovery Publishing House, 2006 15. Textbook of Organic Chemistry (LPSPE) Author: Arun Bahl & B S Bahl ISBN : 9789352837304 S Chand Publishing year: 2019
Suggested equivalent online courses: 1. Organic Chemistry-I By Dr. B. S. Balaji | Jawaharlal Nehru University, New Delhi https://onlinecourses.swayam2.ac.in/ugc19_ch01/preview 2. ntroductory Organic Chemistry I By Prof. Neeraja Dashaputre, Prof. Harinath Chakrapani | IISER Pune https://onlinecourses.nptel.ac.in/noc20_cy30/preview

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 30 Marks University Exam (UE): 70 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE): 30	Class Test Assignment/Presentation	30
External Assessment: University Exam Section: 70 Time:	Section(A): Very Short Questions (50 words each) Section (B) : Short Questions (200 words each) Section (C): Long Questions (500 words each)	70
Total Marks		**100**

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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CBCS Annual Pattern
B.Sc. Ist year
CHEMISTRY– Minor-I
Syllabus of Practical Paper

Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Chemistry			
1	Course Code	MC1-P	
2	Course Title	Basic Organic Chemistry Practical	
3	Course Type: (Core Course/ Elective/ Generic Elective Vocational)	Minor-I	
4	Pre-Requisite (if any)	To study this course the students must have the subject Chemistry in 12th Course or equivalent.	
5	Course Learning Outcome (CLO)	By the end of this course students will learn the following aspects of Laboratory in chemical analysis: • Calibration of Thermometer • Decolorization and Crystallization of Charcoal • Stereo chemical Study of Organic Compounds via Models. • Synthesis of Different Organic Compounds	
6	Credit Value	1(Practical)	
7	Total Marks-100	Max. Marks: 30 +70	**Min. Passing Marks: 35**

Part B- Content of the Course		
Total No. of Lectures-Tutorials-Practical (in hours per week): 4 **L-T-P: 60-0-30**		
S. No.	**Topics**	**No. of Lecture**
1.	**Calibration of Thermometer** 1. 80-82° (Naphthalene) 2. 113.5-114° (Acetanilide) 3. 132.5-133° (Urea)	03

2.	**Crystallization** Concept of induction of crystallization, Phthalic acid from hot water (using fluted filter paper and steamless funnel), Acetanilide from boiling water.	03
3.	**Decolorisation and crystallization using charcoal** Decolorsation of brown sugar (sucrose) with animal charcoal using gravity filtration. Crystallization and decolorisation of impure naphthalene (100g of naphthalene mixes with 0.3 g of Congo Red using 1g decolorizing carbon) from ethanol.	03
4.	**Stereochemical Study of Organic Compounds via Models** R and S configuration of optical isomers E, Z configuration of geometrical isomers Conformational analysis of cyclohexanes and substituted cyclohexane.	03
5.	**Synthesis of Organic Compounds** a) Acetylation of salicylic acid, aniline, glucose and hydroquinone, Benzoylation of aniline and phenol	03
Note	Students should visit any chemical industry to learn or observe the process and preparations practically and submit the report of that industrial visit also	
Keywords/Tags: Stereochemical Study of Organic Compounds via Models, Calibration of Thermometer, Crystallization, Mixed melting point		

Part C-Learning resources

Textbooks, Reference Books, Other resources

Suggested readings:

Textbooks

1. Dr. M.M.N. "Tandon unified practical chemistry" Shiva Lal Agarwal & co.
2. Sudha Goyal (Author), R. P. Singh V. K. Singh (Author), Prashant Singh Ashish Dwivedi (Author) B.Sc. Chemistry Practical I , Krishna Prakashan Media
3. Reinhart Keese, Martin P. Brãndle, Trevor P. Toube Practical Organic Synthesis: A Student's Guide John Wiley & Sons, Inc.,
4. Sudha Goyal B.Sc. Chemistry Practical III Krishna Prakashan Media
5. Furniss, B.S., Hannaford, A.J., Smith, P.W. G., Tatchell, A.R., "Vogel's Textbook of Practical Organic Chemistry", Pearson Education, 2005, 5th Edn.
6. Gurthu, J.N., Kapoor, R., "Advanced Experimental Chemistry", S. Chand and Co., 1987.
7. Sundaram, S., Krishnan, P., Raghavan, P.S., "Practical Chemistry (Part II)", S. Viswanathan Co. Pvt.,1996.
8. Mohd A A, Ramesh K P, Anuradha S, Bassa S, Advanced Laboratory Techniques in Chemistry, Scientific International Publishing house, Tamilnadu, 2024

Reference Books

1. Furniss, B.S., Hannaford, A.J., Smith, P.W. G., Tatchell, A.R., "Vogel's Text Book of Practical

Organic Chemistry", Pearson Education, 2005, 5th Edn
Suggestive digital platforms web links 2 https://vlab.amrita.edu/?sub=2&brch=190&sim=338&cnt=1 3 http://www.columbia.edu/itc/barnard/biology/biobc2004/edit/experiments/Experiment1- Spec.pdf 4 http://web.pdx.edu/~ralfw/uploads/1/0/2/6/10260941/pulse_oximetry_laboratory_guide.pdf 5 https://www.chem.purdue.edu/courses/chm224/Lab-Experiments/expt4_GENESYS_v2.pdf 6 http://gervind.faculty.mjc.edu/biology_101/101_lab/spectrophotometry/4%20Spectrophotometer%20Fa17.pdf 7 https://www.edaq.com/w/images/6/6e/EXP011_The_pH_Electrode_and_Potentiometric_Titrations_PDF.pdf 8 https://www.philadelphia.edu.jo/academics/ajaber/uploads/CHEM%20540-Chapter%202-Potentiometry-061.pdf 9 https://www.tau.ac.il/~advanal/PotentiometricTitrations.htm 10 https://chem.libretexts.org/Bookshelves/Analytical_Chemistry/Book%3A_Analytical_Chemistry_2.1_(Harvey)/11%3A_Electrochemical_Methods/11.02%3A_Potentiometric_Methods 11 https://www.chem.purdue.edu/courses/chm224/Lab-Experiments/Exp8.pdf 12 https://www.shcollege.ac.in/wp-content/uploads/NAAC_Documents_IV_Cycle/CriterionII/2.3.2/ppt/Dr_Ignatious_ConductometricTitration.pdf 13 https://www.analytik.ethz.ch/praktika/phys_anal/POL/Anleitung_ENG.pdf 14 https://nph.onlinelibrary.wiley.com/doi/pdf/10.1111/j.1469-8137.1948.tb05089.x 15 http://chemistry.du.ac.in/study_material/4103-A/MSc_Polarography.pdf 16 https://fac.ksu.edu.sa/sites/default/files/abbe_experiment.pdf 17 https://web.mst.edu/~tbone/subjects/tbone/chem224/riproc.pdf 18 http://www.fbml.ff.vu.lt/sites/default/files/7_4_en.pdf 19 https://wp.optics.arizona.edu/mnofziger/wp-content/uploads/sites/31/2016/05/OPTI202LLab10-OMD2.pdf 20 http://davjalandhar.com/dbt/chemistry/SOP%20LabManuals/B.Sc.%20BT%20SEM%20IV.pdf 21 https://vlab.amrita.edu/?sub=1&brch=195&sim=545&cnt=1
Suggested equivalent online courses: 1. https://www.my-mooc.com/en/mooc/basic-analytical-chemistry/ 2. https://www.my-mooc.com/en/mooc/principles-electronic-biosensors-purduex-nano535x/

Part D- Assessment and Evaluation			
Suggested Evaluation methods:			
Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz	30	Viva Voce on Practical	70
Attendance		Practical Record File	
Assignments (Charts/ Model Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)		Table work/ Experiments	
TOTAL:			**100**

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Physics			
1	Course Code	M2-T	
2	Course Title	Thermodynamics (Theory) (Paper-2)	
3	Course Type: (Core Course/ Elective/ Generic Elective Vocational)	Minor Course	
4	Pre-Requisite (if any)	To study this course the students must have the subject Physics in 12th Class	
5	Course Learning Outcome (CLO)	After completing this course, students will be able to: 1. Understand the historical development of thermodynamics, with a focus on Indian knowledge systems, contributions from Satyendra Nath Bose and Meghnad Saha. 2. Identify the key characteristics and significance of thermal power plants located in Madhya Pradesh. 3. Learn to work of a heat engine to transform heat into work. 4. Apply the principles of calorimetry and Newton's law of cooling in practical scenarios	
6	Credit Value	03	
7	Total Marks-100	Max. Marks: 30 +70	**Minimum Passing Marks: 35**

Part B-Content of the Course		
Total No. Of Lectures (in hours): 45		
Unit	**Topics**	**No. Of Lectures**
I	Historical background & Kinetic theory 1. Historical context of thermodynamics in Indian knowledge systems, Contributions of Satyendra Nath Bose to statistical physics, Biography and significant contributions of Meghnad Saha. 2. Thermal Power Plants Located in Madhya Pradesh and Their Key Characteristics. 3. Kinetic Theory of gases, Maxwell's speed distribution, Mean free path, Elementary treatment of transport phenomena, 4. Viscous flow and Thermal conduction in gases. Real gases, Andrew's curves,	09

	Equation of State. 5. Virial coefficients, Van der Waals equation, Critical constants.	
II	Laws of thermodynamics 1. Thermodynamical system, Thermodynamic equilibrium, Zeroth law of thermodynamics, the concept of path function and point function, First law of thermodynamics, Reversible and irreversible processes, 2. Heat engine and its efficiency, Carnot's engine and its efficiency, Carnot's theorem, Otto engine and diesel engine. 3. Second law of thermodynamics, Statement of Kelvin Plank and Clapeyron, Third law of thermodynamics.	09
III	Entropy 1. Concept of entropy, Clausius theorem, Entropy change in adiabatic reversible process, Entropy as point function, Change in entropy of universe in reversible and irreversible processes. 2. Principle of increase of entropy, Entropy and unavailable energy, Entropy of ideal gases, Entropy as a thermodynamic variable, T-S diagram.	09
IV	Thermodynamic potentials 1. Thermodynamic functions: Internal energy, Enthalpy. Helmholtz and Gibb's free energy. Maxwell's thermodynamical equations and their applications. 2. TdS equations, Derivation of expressions of Cp-Cv for ideal and real gases, derivation of the expression Es/ET = Cp/Cv, Energy and heat capacity equations, Clapeyron equations and its applications (sublimation, vaporization).	09
V	Thermometry, Calorimetry and Radiation 1. Types of thermometers, Platinum Resistance Thermometer, Seebeck effect, Peltier effect, Absolute scale of temperature. 2. Calorimetry, Newton's law of cooling, calorific value of fuels, coefficient of thermal conductivity, Searle's method, Lee's method for bad conductors. 3. Blackbody Radiation, Wien's displacement law, Rayleigh-Jean's law, Planck's quantum theory of radiation.	09
Keywords: Thermodynamics, Thermal Power Plants, Virial coefficients, Critical constants, Thermodynamic equilibrium, Reversible and irreversible processes, Heat engine, Entropy, T-S diagram, Thermodynamic potential, Internal energy, Enthalpy, Helmholtz free energy, Gibb's free energy, Seebeck effect, Peltier effect, Radiations.		

SCHOOL OF STUDIES IN FORENSIC SCIENCE
VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Part C-Learning Resources
Textbooks, Reference Books, Other resources
Suggested Readings: 1. पाण्डेय आर, सी., "सूर्यसिद्धांत", चौखम्बा सुरभारती प्रकाशन, वाराणसी। 2. संसकृत वाय में विज्ञान का इतिहास, NCERT, 2018. 3. Bhaskara II, "Siddhanta Shiromani", (1150 CE). 09 4. Dongre N. G., Nene S. G., "Physics in Ancient India", National Book Trust, India. 5. Saha, M. N., & Srivastava, B. N. (1958). Treatise on Heat. Indian Press. 6. Zemansky M. W. & Dittman R., "Heat and Thermodynamics", Tata McGraw-Hill. 7. Sears and Salinger, "Thermodynamics, Kinetic Theory & Statistical Thermodynamics", Narosa. 8. Garg S. C. & Ghosh C. K., "Thermal Physics", Tata McGraw-Hill. 9. Subrahmanyam N., Brij Lal, Hemne P.S., "Heat Thermodynamics and statistical", S. Chand, 2012. 10. मध्य प्रदेश हिंदी ग्रंथ अकादमी, भोपाल द्वारा प्रकाशित पुस्तकें।
Suggested equivalent online courses: 1. https://www.eshiksha.mp.gov.in/mpdhe/ Learning Management System, Department of higher education, Government of Madhya Pradesh (M.P.). 2. https://www.edx.org course/thermodynamics/ Thermodynamics course.

Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100 Continuous Comprehensive Evaluation (CCE): 30 Marks University Exam (UE): 70 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE): 30	Class Test Assignment/Presentation	30 Marks
External Assessment: University Exam Section: 70 Time: 03:00 Hours	Section(A): Very Short Questions (50 words each) Section (B) : Short Questions (200 words each) Section (C): Long Questions (500 words each)	70 Marks
Total Marks		100 Marks

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VIKRAM UNIVERSITY, UJJAIN (M.P.)

B.Sc. (Hons.) FORENSIC SCIENCE

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Part A Introduction			
Program: Certificate	**Class: B.Sc.**	**Year: I**	**Session: 2025-26**
Subject: Physics			
1	Course Code	M2-P	
2	Course Title	Thermodynamics (Practical) (Paper 2)	
3	Course Type: (Core Course/ Elective/ Generic Elective Vocational)	Minor Course	
4	Pre-Requisite (if any)	To study this course the students must have had the subject Physics in 12th Course.	
5	Course Learning Outcome (CLO)	After completing this course, students will be able to: 1. Measure mechanical equivalent of heat. 2. Determine thermal conductivity materials. 3. Determine specific heat of air and liquids. 4. Calculate the efficiency of electrical kettles. 5. Measure the temperature coefficient of resistance.	
6	Credit Value	1	
7	Total Marks-100	Max. Marks: 30 +70	**Min. Passing Marks: 35**

Part B- Content of the Course		
Total numbers of Practical (in hours): 30		
S. No.	**List of Experiments (Note: Any five of the experiments listed must be performed by students who have opted for Physics as their minor subject.)**	**No. of Practical (in Hours)**
1.	Determination of the mechanical equivalent of heat by Callender & Barne's method.	30
2.	Determination of efficiency of electrical Kettle with variable voltages.	
3.	Determination of thermal conductivity of a bad conductor by Lee's disc method.	
4.	Verification of Newton's law of cooling.	

5.	Determination of the ratio of specific heat of air by Clement-Desorme's method	
6.	Determination of specific heat of a liquid with the help of Newton's law of cooling.	
7.	Determination of the coefficient of thermal conductivity of a metal by Searl's method.	
8.	Determination of thermal conductivity of the rubber using calorimeter.	
9.	Determination of mechanical equivalent of heat (J) using Joule calorimeter.	
10.	Determination of the temperature coefficient of a resistance with the help of Carey-Foster bridge.	

Part C-Learning resources
Textbooks, Reference Books, Other resources
Suggested readings: **1. Prakash I. & Ramakrishna, "A Textbook of Practical Physics", Kitab Mahal, 2011,11/e.** **2. Squires G. L., "Practical Physics", Cambridge University Press, 2015, 4/e.** **3. Flint B. L. and Worsnop H. T., "Advanced Practical Physics for students", Asia Publishing House, 197.** **4. Chattopadhyay D. & Rakshit P. C., "An Advanced Course in Practical Physics", New Central Book Agency.** **Suggested digital platforms/web links:** 1.https://www.vlab.co.in/broad-area-physical-sciences 2. https://storage.googleapis.com/uniquecourses/online.html

Part D- Assessment and Evaluation			
Suggested Continuous Evaluation methods:			
Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz		Viva Voce on Practical	
Attendance		Practical Record File	
Assignments (Charts/ Model Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)		Table work/ Experiments	
Total			**100**

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B.Sc. (Hons.) FORENSIC SCIENCE

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UG I Year: Ability Enhancement Course
Session 2025-26

Course Code	FOSC-AEC		
Course Title	English Language and Indian Culture		
Course Type	AEC Ability Enhancement Course (English Language)		
Course Learning Outcome (CLO)	By the end of this course, students will be able to – • imbibe values which make them aware of national heritage and making them responsible citizens • critically read texts to identify main ideas, infer meanings, and assess the author's purpose. • use grammar and vocabulary effectively for communication • write appropriate correspondence and reports for various professional and social contexts. • Prepare for various competitive exams by developing their English Language competence		
Credit Value	02		
Total Marks	Max. Marks: 100	**Min. Passing Marks: 35**	Exam Duration - 02 Hours

Part B-Content of the Course

Total No. of Lectures: 30

Unit	Topics	No. Of Lectures
I	Understanding Indian Culture 1. Rabindranath Tagore - "Where the mind is without fear" 2. Swami Vivekananda - "Chicago Speech (1893)" 3. R K Narayan - "Astrologer's Day" 4. Introduction to Sundarkand of Valmiki's Ramayan 5. A.L Basham: "The wonder that was India"(an excerpt)	12
II	Comprehension Skills 1. Reading Techniques: Skimming, Scanning 2. Identifying the Main Idea and Theme 3. Making Inferences and Drawing Conclusions 4. Analysing unseen passages on Indian history, society, and art.	02
III	Basic Language Skills Grammar: 1. Parts of Speech 2. Articles	08

	3. Subject-Verb Agreement 4. Tenses and their application Vocabulary: 1. Synonyms, Antonyms, Homonyms, and Homophones 2. One-word substitutes 3. Word formation: Suffixes and Prefixes	
IV	Writing Skills 1. The Writing Process: Pre-writing, Drafting, Revising, and Editing. 2. Paragraph Writing: Structure, Topic Sentence, and Coherence. 3. Letter writing: Formal/Informal	04
V	Situational Conversation- Context, Audience, Purpose, Type, Register 1. Meeting/Greeting - Introducing Self; Introducing people to one another 2. Apologies/Responses 3. Enquiring about a Course/ Requesting Information 4. Agreeing/Disagreeing (with a Proposal)	04
Keywords: Heritage, Diversity, Values, Patriotism, Critical reading, Theme, paraphrasing, summary, Tense, clause, phrase, cohesion, drafting, editing, register, tone, context, etiquette.		

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

1. Tagore should make attendance optional for lectures. R. (1912). Gitanjali (Song Offerings). "Where the Mind is Without Fear" is Poem No. 35 in this collection.)
2. Complete Works of Swami Vivekananda. Vol. 1. Advaita Ashrama (Publication Department of Ramakrishna Math, Belur Math, Kolkata).
3. Swami Tapasyananda, Sundarkandam of Srimad Valmiki Ramayana. Sri ram Krishna Math, Madras
4. Narayan, R.K. Malgudi Days. Indian Thought Publications; 1st edition (11 December 2019);
5. Cultural Heritage of India by S. Radhakrishnan & Haridas Bhattacharyya (ed.)
6. A Course in English Grammar and Composition by Geetha Nagaraj
7. Functional English by Dr. P. Kiranmai Dutt & Geetha Rajeevan (Foundation Books /Cambridge India)
8. Communicative English by E. Suresh Kumar, P. Sreehari, and J. Savithri (Orient Black Swan) 9. Practical English Usage by Michael Swan (Oxford)
10. Modern English Grammar by N.Krishnaswamy, Macmillion Publication
11. Developing Reading Skills: A Practical Guide to Reading Comprehension Exercises"by Francoise Grellet (Cambridge)
12. Writing Skills by Norman Coe, Robin Rycroft & Pauline Ernest (Cambridge)

Suggested Equivalent Online Course

1. NPTEL Course - "Communication Skills" (by IIT Kharagpur)
https://nptel.ac.in/courses/109/106/109106175/
2. Swayam Course - "English Language for Competitive Exams" (by IIT Madras
https://onlinecourses.nptel.ac.in/noc23_hs51/preview
3. British Council India - "Learn English: Speaking and Writing Skills"
https://www.britishcouncil.in/english/courses-adults/learnonline
4. Coursera - "Write Professional Emails in English" (by Georgia Tech)
https://www.coursera.org/learn/professional-emails-english

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Part D-Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks: 100		
External Assessment: University Exam Time:	Section A - Very Short Questions (50 words) Section B- Short Questions (200 words) 5 questions Section C- Long Answer Questions (400 words) Two Questions to be attempted out of 4 questions	5x4=20 5x10=50 2x15=30

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सैद्धांतिक प्रश्नपत्र के पाठ्यक्रम हेतु प्रारूप

Part A Introduction		
कार्यक्रमः स्नातक प्रथम वर्ष	कक्षाः बी.ए./बी.कॉम./बी.एससी./बी.एच.एससी./ बी.सी.ए./बी.बी.ए. (प्रथम वर्ष)	सत्र- 2025-26
विषयः Value Added Course (VAC)		
पाठ्यक्रम का कोड	FOSC-VAC	
पाठ्यक्रम का शीर्षक	भारत बोध (Understanding India)	
पाठ्यक्रम का प्रकारः	VAC	
पूर्वापेक्षा (यदि कोई हो)	कक्षा 12 वी उत्तीर्ण	
पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम):	इस कोर्स का अध्ययन करने के बाद, 1. भारत के ऐतिहासिक, सांस्कृतिक और संवैधानिक स्वरूप की मूलभूत समझ विकसित करना। 2. भारतीय शिक्षा पद्धति, ज्ञान परंपरा और राष्ट्रीय मूल्यों के प्रति छात्रों में संवेदनशीलता उत्पन्न करना। 3. भारत की स्वतंत्रता संग्राम, लोकतांत्रिक विकास और वैश्विक भूमिका समझने में सहायता करना। 4. संविधान में निहित दायित्वों एवं अधिकारों की जानकारी देकर छात्रों को जिम्मेदार नागरिक बनाना।	
क्रेडिट मान	02	
कुल अंक	100	

भाग ब - पाठ्यक्रम की विषयवस्तु

व्याख्यान की कुल संख्या (प्रति सप्ताह घंटे में):
कुल व्याख्यान - 30 घंटे

ईकाई	विषय	व्याख्यान की संख्या
I	**भारतीय इतिहास और सांस्कृतिक विरासत** • सिन्धु, वैदिक, और शास्त्रीय काल की विशेषताएँ • सह-अस्तित्व और बहुलता की भारतीय अवधारणा • सांस्कृतिक प्रतीकः धर्म, स्थापत्य, संगीत, नाट्य, लोकाचार • 'वसुधैव कुटुम्बकम्', 'सर्वे भवन्तु सुखिनः' जैसे सूत्रों की आधुनिक प्रासंगिकता	06
II	**भारतीय संविधान और नागरिक दायित्व** • वैदिक राजधर्म और आधुनिक संविधान • मूल अधिकार और कर्तव्यः धर्म-कर्तव्य-नैतिकता	06

	• युवा नागरिक और लोकतांत्रिक भागीदारी • शिक्षा का राष्ट्रनिर्माण में योगदान	
III	**भारतीय ज्ञान परंपरा और शिक्षा दृष्टिकोण** • भारतीय ज्ञान के स्रोतः वेद, उपनिषद, दर्शन, स्मृति, लोक-साहित्य • गुरुकुल परंपराः शिष्य-केंद्रित शिक्षण, वाचिक परंपरा और स्मृति आधारित अधिगम • शिक्षा का उद्देश्यः आत्मोत्कर्ष एवं लोकसंग्रह • शिक्षक की भूमिकाः 'आचार्य देवो भवः', चरित्र निर्माण, सामाजिक पुनर्निर्माण में योगदान	06
IV	**भारत का जीवन-दर्शन और सतत भविष्य की अवधारणा** • भारतीय जीवन-दृष्टिः पुरुषार्थ चतुष्टय, आश्रम व्यवस्था और कर्तव्य आधारित नैतिकता • प्रकृति के साथ सामंजस्यः यज्ञ, पंचमहाभूत, ऋतुचक्र और पर्यावरण संतुलन • भारतीय अर्थदर्शनः अर्थशास्त्र, स्वदेशी, श्रम-संस्कृति और लोक-उद्यम • सतत विकास और पर्यावरणीय न्याय की भारतीय अवधारणा	06
V	**समकालीन भारत और वैश्विक भूमिका** • स्वतंत्रता संग्राम में धार्मिक, सांस्कृतिक और बौद्धिक नेतृत्व की भूमिका • भारत का योगदानः अंतरिक्ष विज्ञान, योग, कूटनीति, शांति दर्शन • 'आत्मनिर्भर भारत': परंपरा और नवाचार का समन्वय • वैश्विक परिप्रेक्ष्य में भारतः 'सॉफ्ट पावर', बहुध्रुवीय विश्व में भूमिका	06

भाग स- अनुशंसित अध्ययन संसाधन
Textbooks, Reference Books, Other resources

संदर्भ ग्रन्थ सूची

1. काटदरे, इंदुमति। भारतीय शिक्षाः संकल्पना एवं स्वरूप। पुनरुत्थान प्रकाशन सेवा ट्रस्ट, अहमदाबाद।
2. कुमार, कृष्ण। प्राचीन भारतीय शिक्षा पद्धति । श्री सरस्वती सदन, दिल्ली।
3. सलूजा, चंद किरण। (2023)। शिक्षाः भारतीय परिप्रेक्ष्य। संस्कृत संवर्धन प्रतिष्ठान, नई दिल्ली।
4. कपूर, कपिल एवं सिंह, अवधेश कुमार (संपादक)। (2005)। Indian Knowledge Systems (खंड 1-2)। इंडियन इंस्टिट्यूट ऑफ एडवांस्ड स्टडी, शिमला; डी.के. प्रिंटवर्ल्ड, नई दिल्ली।
5. स्वरूप, देवेंद्र। संस्कृति एकः नाम-रूप अनेक प्रतिभा प्रकाशन, नई दिल्ली।
6. स्वरूप, देवेंद्र (संपादक)। (2010)। राष्ट्रीय शिक्षा आंदोलन का इतिहास (हिंदी संस्करण)। प्रतिभा प्रतिष्ठान, नई दिल्ली।
7. अग्रवाल, वासुदेव शरण (संपादक)। (2023)। राष्ट्र, धर्म और संस्कृति (निबंध संचयन)। प्रभात प्रकाशन, नई दिल्ली।
8. मिश्र, रामेश्वर 'पंकज'। (2024)। अद्वितीय समाजशास्त्र प्रभात प्रकाशन, नई दिल्ली।
9. पाण्डेय, ओम प्रकाश (संपादक)। (2023)। भारत वैभव। राष्ट्रीय पुस्तक न्यास (एनबीटी), नई दिल्ली।
10. सुब्बारायप्पा, बी.वी. । भारतीय विज्ञान परंपरा । राष्ट्रीय पुस्तक न्यास (एनबीटी), नई दिल्ली।

स्रोत

- https://www.youtube.com/watch?v=VUOvIdPx8h4
- https://www.youtube.com/watch?v=1IivkUGjeFA&list=PLfGFNxUDX0eholQwKZ2ekqaxY3P

DtoDq-&index=4 • https://www.youtube.com/watch?v=SuMnvLxc9ic • https://www.youtube.com/watch?v=iPuRqFlmoSc • .youtube.com/watch?v=YZQeUq5d48Q&list=PL a1T15CC9RG8wPaNNDOk6VjSdhe0KsHE&index=6 • https://www.youtube.com/watch?v=9PLs N6WbxE

भाग द - अनुशंसित मूल्यांकन विधियां		
• **अनुशंसित सतत मुल्यांकन विधियां:** • **अधिकतम अंक:** 100 • **न्यूनतम अंक** 35 • **विश्वविद्यालयीन परीक्षा:** 100		
अ कलन: • विश्वविद्यालयीन परीक्षा • **समय:** 02 घंटे	**अनुभाग (अ)** पांच लघु प्रश्न **अनुभाग (ब)** पांच दीर्घ उत्तरीय प्रश्न	**कुल अंक:** 100