Syllabus B.Tech. I Year

Board of Studies (Applied Sciences)

Meeting held on

Saturday, August 2, 2025

Applicable for All B.Tech. Programs Offered by the Institute for Session 2025-26 Onwards

(Students Admitted in 2025-26)

Course Category Sequence

1. **Humanities and Social Sciences & Management Courses (HSMC)**

2. **Basic Science Courses (BSC)**

3. **Engineering Science Courses (ESC)**

4. **Skill Development (SK)**

5. **Foundation Course (FC)**

6. **Program Core Courses (PCC)**

7. **Program Elective Courses (PEC)**

8. **Open Elective Courses (OEC)**

9. **Project Work/Seminars/ Internship/Training (PSIT)**

10. **Audit/Value-based/Mandatory Courses**

S. No.	Category	Course Code	Course Title	Hours			Marks			Cr
				L	T	P	IA	ETE	Total	
1	BSC	251AS2-01	Engineering Mathematics-I	3	1	-	40	60	**100**	**4**
2	BSC	251AS2-02	Engineering Physics	2	-	-	40	60	**100**	**2**
		251AS2-03	Engineering Chemistry							
3	HSMC	251HS1-04	Communication Skills	2	-	-	40	60	**100**	**2**
4	ESC	251CS3-06	Programming for Problem Solving	3	-	-	40	60	**100**	**3**
5	ESC	251EE3-08	Basic Electrical & Electronics Engineering	3	-	-	40	60	**100**	**3**
		251CS3-09	Web Designing							
6	ESC	251ME3-10	Basic Mechanical Engineering	2	-	-	40	60	**100**	**2**
		251CE3-11	Basic Civil Engineering							
7	BSC	251AS2-20	Engineering Physics Lab	-	-	2	60	40	**100**	**1**
		251AS2-21	Engineering Chemistry Lab							
8	HSMC	251HS1-22	Language Lab	-	-	2	60	40	**100**	**1**
		251HS3-23	Employability & Soft Skills Lab							
9	ESC	251CS3-24	Computer Programming Lab	-	-	2	60	40	**100**	**1**
10	ESC	251EE3-26	Basic Electrical & Electronics Engineering Lab	-	-	2	60	40	**100**	**1**
		251CS3-27	Web Designing Lab							
11	ESC	251ME3-28	Advanced Manufacturing Practices Workshop	-	-	2	60	40	**100**	**1**
		251CE3-29	Basic Civil Engineering Lab							
12	ESC	251ME3-30	Computer Aided Engineering Graphics	-	-	2	60	40	**100**	**1**
13	SK	251SK3-32	Design Thinking Lab (IDEA Lab)	-	-	1	60	40	**100**	**0.5**
14	#Foundation Course (FC)	251FC8-0X	NSS/Sports & Yoga	-	-	1	-	-	**100**	**0.5**
Total				**15**	**1**	**14**				**23**
L: Lecture, T: Tutorial, P: Practical, IA: Internal Assessment ETE: End Term Exam, Cr: Credits										

Teaching and Examination Scheme I Semester: B. Tech 2025-26 (Autonomous)
Common to all branches of UG Engineering

*Value Added Courses (VACs) and Campus Recruitment Training (CRT) would be the part of Mandatory Non-credit Courses and their assessment will be a part of the Academic Manual of the institute.

#Foundation course assessment will be a part of the Academic Manual and Examination Policy of the institute.

S No.	Category	Course Code	Course Title	Hours			Marks			Cr
				L	T	P	IA	ETE	Total	
			Teaching and Examination Scheme II Semester: B. Tech 2025-26 (Autonomous)							
			Common to all branches of UG Engineering							
1	BSC	252AS2-01	Engineering Mathematics-II	3	1	-	40	60	100	4
2	BSC	252AS2-02	Engineering Physics	2	-	-	40	60	100	2
		252AS2-03	Engineering Chemistry							
3	HSMC	252HS1-05	Human Values and Ethics	2	-	-	40	60	100	2
4	ESC	252CS3-06	Object Oriented Programming	3	-	-	40	60	100	3
5	ESC	252EE3-08	Basic Electrical & Electronics Engineering	3	-	-	40	60	100	3
		252CS3-09	Web Designing							
6	ESC	252ME3-10	Basic Mechanical Engineering	2	-	-	40	60	100	2
		252CE3-11	Basic Civil Engineering							
7	BSC	252AS2-20	Engineering Physics Lab	-	-	2	60	40	100	1
		252AS2-21	Engineering Chemistry Lab							
8	HSMC	252HS1-22	Language Lab	-	-	2	60	40	100	1
		252HS3-23	Employability & Soft Skills Lab							
9	ESC	252CS3-25	Object Oriented Programming Lab	-	-	2	60	40	100	1
10	ESC	252EE3-26	Basic Electrical & Electronics Engineering Lab	-	-	2	60	40	100	1
		252CS3-27	Web Designing Lab							
11	ESC	252ME3-28	Advanced Manufacturing Practices Workshop	-	-	2	60	40	100	1
		252CE3-29	Basic Civil Engineering Lab							
12	ESC	252ME3-31	Computer Aided Machine Drawing	-	-	2	60	40	100	1
13	SK	252SK3-33	Innovation Development Lab (IDEA Lab)	-	-	1	60	40	100	0.5
14	#Foundation Course (FC)	252FC8-0X	NSS/Sports & Yoga	-	-	1	-	-	100	0.5
Total				**15**	**1**	**14**				**23**
L: Lecture, T: Tutorial P: Practical, IA: Internal Assessment ETE: End Term Exam, Cr: Credits										

*Value Added Courses (VACs) and Campus Recruitment Training (CRT) is part of Mandatory Non-credit Courses and its assessment will be based on the guidelines mentioned in the Academic Manual of the institute.

#Foundation course assessment will be done as per Academic Manual and Examination Policy of the institute.

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Department of Applied Sciences	
AY 2025-26	
Course Information	
Program	B.Tech.
Class, Semester	I Year, I Sem
Course Code	251AS2-01
Course Name	**Engineering Mathematics-I**
Desired Requisites:	Students are expected to know the basic concepts of Senior Secondary Mathematics

Teaching Scheme		Examination Scheme (Marks)				
Lecture	3 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	1 Hr/week	16	16	8	60	100
Interaction	48	**Credits: 4**				

Course Objectives	
1	To equip students with the ability to evaluate improper integrals using special functions (Beta and Gamma) and apply definite integrals to solve problems involving areas, surface areas, and volumes of revolution.
2	To develop proficiency in representing and analysing periodic functions using Fourier series, including even/odd expansions, Euler's formula, change of intervals, and half-range series.
3	To strengthen understanding of multivariable calculus (differentiation) by introducing partial derivatives, Euler's theorem, tangent planes, normal, and optimization techniques including Lagrange multipliers.
4	To provide competence in multiple integration (double and triple integrals), including change of order and variables, with practical applications to finding areas, volumes, and physical quantities in standard regions.
5	To introduce the principles of vector calculus and their applications, focusing on gradient, divergence, curl, directional derivatives, line and surface integrals, and the use of Green's, Gauss's, and Stokes' theorems in solving real-world problems.

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Remember the formulas and concepts of differentiation and integration, maxima and minima of a function, and distinguish between vector fields and scalar fields.	Remember
CO2	Comprehend the properties of Fourier series, the geometry of tangent planes and normal lines. Estimate the gradient, divergence and curl of a vector and vector identities.	Understand
CO3	Apply techniques of multivariable calculus, Lagrange multipliers, multiple integration, and vector integral theorems (Green's, Gauss's, and Stokes's) to solve real-world engineering problems.	Apply
CO4	Classify critical points of multivariable functions, identify even and odd functions for Fourier series and apply integral theorems under suitable condition	Analyze
CO5	Evaluate complex integrals (line, surface & volume) and assess the convergence of Fourier series and improper integrals involving Beta and Gamma functions for practical use.	Evaluate

Chapter	Course Contents	Hours
I	Calculus: Improper integrals (Beta and Gamma functions) and their properties; Applications of definite integrals to evaluate surface areas and volumes of revolutions.	6
II	Fourier Series: Periodic functions, Even and Odd Function Fourier series, Euler's formula, Change of intervals, Half range sine and cosine series	7
III	Multivariable Calculus (Differentiation): Partial derivatives, Euler's theorem for homogeneous function, Total derivative, Tangent plane and normal line, Maxima, minima and saddle points, Method of Lagrange multipliers	8
IV	Multivariable Calculus (Integration): Multiple Integration: Double integrals (Cartesian), Change of order of integration in double integrals, Change of variables (Cartesian to polar), Applications of area & volume, Triple integrals (Cartesian), Simple applications involving cubes, sphere and rectangular parallelepipeds	7

V	Vector Calculus and Applications: Vector and Scalar field, Gradient, divergence and curl, Directional derivatives, Scalar line integrals, Vector line integrals, Scalar surface integrals, Vector surface integrals, Theorems of Green, Gauss and Stokes.		8

Text Books

1	A Textbook of Engineering Mathematics-I by Gangwar, H. S., & Gupta, P. New Age International Pvt. Ltd., 2nd Edition, 2010
2	Verma G., Pathak, M., Ali S., Shukla P. K., & Trivedi, M. (2025). A Text Book of Engineering Mathematics - I (1st Ed.). Walnut Publications
3	Yang, X.-S. (2007). Applied Engineering Mathematics (1st Ed.). Cambridge International Science Publishing.
4	Bali, N. P., & Goyal, M. (2014). A Textbook of Engineering Mathematics (9th Ed.). Laxmi Publications (P) Ltd.

Reference Books

1	Raman B. V. (2025). Higher Engineering Mathematics (1st Ed.)-McGraw Hill.
2	Kryzig E. (2020). Advanced Engineering Mathematics, (22nd Ed.)- Chaukhamba Auriyantaliya.
3	Croft, A., Davison, R., Hargreaves, M., & Flint, J. (2017). Engineering mathematics: A foundation for electronic, electrical, communications and systems engineers (5th Ed.). Pearson.
4	Verma, R., Verma, R., & Dass H K. (2024). Advanced Engineering Mathematics (23rd Ed.), S. Chand Publication.
5	Neil P. O. (2012). Advanced Engineering Mathematics (7th Ed.), Cengage Learning Publication.

Useful Links

1	https://nptel.ac.in/courses/111105122
2	https://onlinecourses.swayam2.ac.in/cec25_ma05/preview
3	https://math.mit.edu/~gs/cse/websections/cse41.pdf
4	https://www.youtube.com/watch?v=qv7DM5Ph0vU&t=13s

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	-	2	-	-	-	-	-	-	-	2
CO2	2	3	-	2	-	-	-	-	-	-	-	2
CO3	2	3	1	3	-	-	-	-	-	-	-	2
CO4	2	2	-	2	-	-	-	-	-	-	-	1
CO5	3	3	2	2	-	-	-	-	-	-	-	1

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	3	-	-	1	-	-	1	-	-	2	-	-	1	-	-	2	-
CO2	-	1	-	-	2	-	-	3	-	-	3	-	-	1	-	-	2	-	-	3	-
CO3	-	2	-	-	1	-	-	2	-	-	1	-	-	2	-	-	1	-	-	2	-
CO4	-	1	-	-	2	-	-	1	-	-	2	-	-	3	-	-	2	-	-	1	-
CO5	-	3	-	-	1	-	-	2	-	-	3	-	-	1	-	-	1	-	-	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

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<table>
<tr><td colspan="7" align="center">Department of Applied Sciences</td></tr>
<tr><td colspan="7" align="center">AY 2025-26</td></tr>
<tr><td colspan="7" align="center">Course Information</td></tr>
<tr><td colspan="2">Program</td><td colspan="5">B.Tech.</td></tr>
<tr><td colspan="2">Class, Semester</td><td colspan="5">I Year I & II Sem</td></tr>
<tr><td colspan="2">Course Code</td><td colspan="5">251AS2-02/252AS2-02</td></tr>
<tr><td colspan="2">Course Name</td><td colspan="5">Engineering Physics</td></tr>
<tr><td colspan="2">Desired Requisites:</td><td colspan="5">Students are anticipated to possess a fundamental comprehension of essential Physics principles that are crucial for applications in engineering and technology.</td></tr>
<tr><td colspan="2">Teaching Scheme</td><td colspan="5" align="center">Examination Scheme (Marks)</td></tr>
<tr><td>Lecture</td><td>2 Hrs/week</td><td>MTE1</td><td>MTE2</td><td>MTE3</td><td>ETE</td><td>Total</td></tr>
<tr><td>Tutorial</td><td>-</td><td>16</td><td>16</td><td>8</td><td>60</td><td>100</td></tr>
<tr><td>Interaction</td><td>24</td><td colspan="5" align="center">Credits: 2</td></tr>
</table>

<table>
<tr><td colspan="2" align="center">Course Objectives</td></tr>
<tr><td>1</td><td>Equip students with a strong understanding of basic physics concepts, enabling them to apply these principles to real-world engineering challenges.</td></tr>
<tr><td>2</td><td>Develop students' ability to Analyze and solve complex engineering problems by using scientific methods and physics-based solutions.</td></tr>
<tr><td>3</td><td>Provide students with the ability to integrate physics with other engineering disciplines, enhancing their capacity to tackle diverse technological problems.</td></tr>
<tr><td>4</td><td>Encourage students to think critically and creatively, fostering the development of innovative solutions to emerging engineering and technological issues.</td></tr>
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<table>
<tr><td colspan="3" align="center">Course Outcomes (CO) with Bloom's Taxonomy Level</td></tr>
<tr><td>CO1</td><td>Recall and define fundamental concepts, laws, and terminology related to wave optics, quantum mechanics, lasers, optical fibres, material science, semiconductors, and electromagnetism.</td><td>Remember</td></tr>
<tr><td>CO2</td><td>Understand the principles of interference and diffraction, the properties of wave functions, the mechanism of laser action, and the band theory of solids.</td><td>Understand</td></tr>
<tr><td>CO3</td><td>Apply key concepts in Quantum Mechanics, Lasers, and Optical Fibers, including wave-particle duality, Schrödinger's equation, laser operation, and optical fibre communication, to solve problems and assess their applications in various fields.</td><td>Apply</td></tr>
<tr><td>CO4</td><td>Analyze the diffraction of light, the energy levels and spatial distribution of a particle in one-dimensional and three-dimensional potential boxes, the free electron theories, band theory of solids, and the Hall Effect.</td><td>Analyze</td></tr>
<tr><td>CO5</td><td>Evaluate the core concepts of Electrodynamics, including Maxwell's equations, alongside Green Energy technologies and the basics of Nanotechnology and its applications.</td><td>Evaluate</td></tr>
</table>

<table>
<tr><td>Chapter</td><td align="center">Course Contents</td><td>Hours</td></tr>
<tr><td>I</td><td>Wave Optics: Newton's Rings, diffraction of light, Fraunhofer diffraction for single & N-slit systems, transmission diffraction grating- construction, theory, and applications of wavelength determination, maximum order of spectra, and missing order spectra.</td><td>6</td></tr>
<tr><td>II</td><td>Quantum Mechanics: introduction, wave-particle duality, wave function & properties, Introduction of quantum tunnelling, time-dependent and time-independent Schrödinger's wave equations, applications, one-dimensional and three-dimensional boxes problems.</td><td>4</td></tr>
<tr><td>III</td><td>LASER, Coherence and Optical Fiber: The quantum process of lasing, Einstein's coefficients, population inversion, metastable states, components of LASER, construction and working principle of He-Ne LASERS.
Coherence -spatial and temporal coherence, coherence length, coherence time, Optical fibres - construction, working principle, step-index, graded-index, maximum acceptance angle, acceptance cone, numerical aperture, and V-number.</td><td>5</td></tr>
</table>

IV	**Solid State Physics:** The classical and quantum theories of free electrons, the failure of Sommerfeld's free electron theory, band theory of solids, Hall effect.	3
V	**Electrodynamics:** Divergence and curl in electrostatics and magnetostatics, Laplace's and Poisson's equations, displacement current, Maxwell's equations in integral and differential forms, introduction to electromagnetic energy flow. **Introduction to Nanotechnology & Green energy:** Basics of nanotechnology, basic idea of carbon nanotubes, quantum dots and an overview of non-conventional energy sources such as solar, wind, and tidal energy.	6

Text Books	
1	Engineering Physics by H. K. Malik, A. K. Singh, McGraw Hill Education, 2nd Edition, 2017.
2	R Engineering Physics by. K. Gaur and S. L. Gupta, Dhanpat Rai Publications, 2017.
3	A Text Book of Engineering Physics by M. N. Avadhanulu, P. G. Kshirsagar, and T. V. S. Murthy, S. Chand Publication, 11th Edition, 2022
4	Quantum Mechanics by Leonard I. Schiff, McGraw Hill, 3rd (International Student) Edition, 1969.

References Books	
1	Elements of Material Science and Engineering by Van Vlack, 6th Edition, Pearson, 2002.
2	Concepts of Modern Physics by A. Beiser McGraw Hill International, 6th Edition, 2003.
3	Optics by Ajoy Ghatak, Tata McGraw Hill Education, 5th Edition, 2012.
4	A Text Book of Quantum Mechanics by P. M. Mathews, K. Venkatesan, The McGraw Hill Companies, 2010.
5	Fundamental of Optics by Francis A. Jenkins, and Harvey E. White, McGraw-Hill Primls Custom Publishing, 4th Edition, 2001.
6	Modern Physics by J. Morrison, Academic Press, Elsevier, 2nd Edition, 2010,

Useful Links	
1	For optics https://nptel.ac.in/courses/122107035
2	https://sreevahini.edu.in/pdf/NPTEL-VIDEOS-SH.pdf
3	http://hyperphysics.phy-astr.gsu.edu/hbase/index.html
4	https://ocw.mit.edu/search/?d=Physics&s=department_course_numbers.sort_coursenum
5	https://www.physicsclassroom.com/

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	-	2	-	-	-	-	-	-	-
CO2	2	1	2	1	2	-	-	-	-	-	-	-
CO3	2	2	2	-	2	-	-	-	-	-	-	-
CO4	2	1	1	2	2	-	-	-	-	-	-	-
CO5	2	2	2	-	2	-	-	-	-	-	-	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	1	-	1	-	-	1	-	-	-	1	-	1	1	-	-	1	-
CO2	-	2	-	-	1	-	1	-	-	1	-	-	-	1	-	1	1	-	-	1	-
CO3	-	2	-	-	1	-	1	-	-	1	-	-	-	1	-	1	1	-	-	1	-
CO4	-	2	-	-	1	-	1	-	-	1	-	-	-	1	-	1	1	-	-	1	-
CO5	-	2	-	-	1	-	1	-	-	1	-	-	-	1	-	1	1	-	-	1	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

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Department of Applied Sciences						
AY 2025-26						
Course Information						
Program	B.Tech.					
Class, Semester	I Year, I & II Sem					
Course Code	251AS2-03/252AS2-03					
Course Name	**Engineering Chemistry**					
Desired Requisites:	Foundational knowledge of basic Chemistry.					
Teaching Scheme		**Examination Scheme (Marks)**				
Lecture	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	16	16	8	60	100
Interaction	24	**Credits: 2**				
Course Objectives						
1	Develop students to understand water hardness and its treatment.					
2	To develop knowledge of various organic fuel and their application.					
3	To understand about the knowledge of corrosion and its protection techniques.					
4	To understand the advance New Engineering material (Polymer, Lubricant and Nano materials) and E-waste material.					
Course Outcomes (CO) with Bloom's Taxonomy Level						
CO1	Recall the definition and importance of water hardness, fuel classification, corrosion, Advanced Engineering materials and e-waste.					Remember
CO2	Understand the purification process of municipal water, boiler troubles and issues related to corrosion and correlate different water softening techniques and corrosion prevention practices.					Understand
CO3	Apply the synthesis of advanced materials and management of e-waste					Apply
CO4	Analyze the fuel quality, Engineering materials and their applications for sustainable development of society and environment.					Analyze
CO5	Determine the fuel's calorific value, and the amount of air needed for fuel burning for mitigating energy demand of industry.					Evaluate
Chapter	**Course Contents**					**Hours**
I	**Water:** Common impurities, hardness, determination of hardness by complexometric (EDTA method), Degree of hardness, Units of hardness. Municipal water supply: Requisite of drinking water, Purification of water; sedimentation, filtration, disinfection, breakpoint chlorination, Reverse osmosis. Boiler troubles: Scale and Sludge formation, Internal treatment methods, Priming and Foaming, Boiler corrosion and Caustic Embrittlement (definition, causes, prevention). Water softening; Lime-Soda process, Zeolite (Permutit) process, Demineralization process. Numerical problems based on Hardness, EDTA, Lime-Soda and Zeolite process.					6
II	**Organic Fuels:** Solid fuels: Coal, Proximate and Ultimate Analysis of coal and its significance, Gross and Net Calorific value, Determination of Calorific value of coal by Bomb Calorimeter. Metallurgical coke, Carbonization processes; Otto-Hoffmann by-product oven method. Liquid fuels: Advantages of liquid fuels, Refining, Cracking, Synthetic petrol, Reforming, Knocking, Octane number, Anti-knocking agents, Cetane number, Biodiesel-Preparation, properties and uses. Gaseous fuels: Advantages, Determination of calorific value of gaseous fuels by Junker's calorimeter Numerical problems based on determination of calorific value (bomb calorimeter/Junkers calorimeter/Dulong's formula, Proximate & Ultimate analysis, combustion of fuel.					6
III	**Corrosion and Protective Coatings:** Definition and significance of corrosion, Mechanism of chemical (dry) and electrochemical (wet) corrosion, galvanic corrosion, concentration corrosion and pitting corrosion. Protection from corrosion; protective coatings-galvanization and tinning, cathodic protection, sacrificial anode and modifications in design.					4

	Engineering Materials:	
IV	**Lubricants:** Classification, Mechanism, Properties; Viscosity and viscosity index, flash and fire point, cloud and pour point. Emulsification, SEN **Polymer:** Basic concepts of polymer-Blend and composites, Conducting and biodegradable polymers. Preparation and application of some industrially important polymers (Buna-S, Buna-N, Neoprene, Nylon-6, nylon-6, 6 and Terylene). **Nano materials:** Introduction to Nanoscience and Nanotechnology, Classification, Synthesis of basic characterization techniques of Nanomaterials, Applications of Nanomaterials	5
V	**E-Waste Management:** E-Waste-Introduction, sources of E-waste, Composition, Characteristics, and Need of E-waste management. Toxic materials used in manufacturing electronic and electrical products; health hazards due to exposure to E-waste. Approaches for Recycling and Recovery from E- waste (separation, thermal treatments, Hydrometallurgical extraction, pyro metallurgical methods, direct recycling).	3

	Text Books
1	Engineering Chemistry by S. S. Dara, S. S. Umare, S. Chand Publ., 12th Edition, 2006.
2	Engineering Chemistry by P. C. Jain and Monika Jain 17th Edition, Dhanpat Rai Publishing Company, New Delhi, 2021-22.

	References
1	Engineering Chemistry by O. G. Palanna, McGraw Hill Education, Second Edition, 2017
2	Future of E-Waste Management: Challenges and Opportunities by Navtika Singh Nautiyal and Shushita Agarwal, Thomson Reuters, 1st Edition, 2021
3	Solid Waste management by K. Sarikumar Sanoop Gopi Krishna, PHI Learning Private Limited, Eastern Economy Edition, 2009, Page no. 249-254 for E-waste.
4	E-Waste Management: Challenges and Opportunities in India by Varsha Bhagat-Ganguly, South Asia Edition, 2021, A Routledge India Original

	Useful Links
1	https://youtu.be/mnx7kfL4f38
2	https://www.youtube.com/watch?v=EJeTOUSmkBE
3	https://youtu.be/svXe-svCEho?listst=PLLf6O8XdGj00RTPli8Gn0zXuaaZvcUDj4
4	https://youtu.be/zS0eaJRYgIM?listst=PLFW6lRTa1g81kobA2tvZ84YHB2li6qwx7

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	2	1	-	-	-	-	-
CO2	3	2	-	-	-	2	1	-	-	-	-	-
CO3	3	2	-	-	-	2	2	-	-	-	-	-
CO4	3	3	-	-	-	2	2	-	-	-	-	-
CO5	3	2	-	-	-	2	2	-	-	-	-	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-
CO2	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-
CO3	-	2	-	-	3	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-
CO4	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-
CO5	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

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Department of Applied Sciences						
AY 2025-26						
Course Information						
Program	B.Tech.					
Class, Semester	I Year, I Sem					
Course Code	251HS1-04					
Course Name	**Communication Skills**					
Desired Requisites:	Foundational knowledge of English Language.					
Teaching Scheme		**Examination Scheme (Marks)**				
Lecture	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	16	16	8	60	100
Interaction	24	**Credits: 2**				
Course Objectives						
1	To recall and recognize the fundamental principles, types, and methods of effective communication.					
2	To apply structural and grammatical knowledge in technical writing for clarity and accuracy.					
3	To develop competence in writing skills for various forms of technical and business communication.					
4	To improve reading proficiency with correct pronunciation, stress, intonation, and articulation while understanding the connection between literature and reality.					
Course Outcomes (CO) with Bloom's Taxonomy Level						
CO1	Identify and explain types of communication, barriers, and techniques for effective team building.					Understand
CO2	Apply grammatical rules (tenses, active/passive voice, reported speech, infinitives, gerunds, punctuation) to construct error-free sentences.					Apply
CO3	Demonstrate personality development and presentation skills such as body language, time management, goal setting, and impression management.					Apply
CO4	Develop professional writing skills through tasks such as emails, business letters, resumes, blogs, reports, and paraphrasing exercises.					Apply
CO5	Analyze and interpret literary texts (poetry & prose) to enhance critical thinking, creativity, and aesthetic understanding.					Analyze
Chapter	**Course Contents**					**Hours**
I	**Communication and Team Building: Types and Barriers of Communication** Story mason/making, Picture connector, Tourism Pitch Who gets the heart? Debate, Theatrix, Extempore, Shopping role play, Insane Inventor, Team VS Wild					4
II	**Applied Grammar:** Sentences Framing, Tenses, Active and Passive Voice, Reported Speech, Infinitives and Gerunds, Punctuation					4
III	**Personality Development and Presentations Skills:** Body Language, Habit formation, Goal setting, Team Building, Impression Management, Time Management, Email Writing					4
IV	**Comprehension and Writing Skills:** Email Writing, Business letter writing, Job Application and CV/Resume Writing, Paragraph Writing, Blog Writing and Paraphrasing, Idioms and Phrases					6
V	**Readings and Critical Thinking:** 'Night of the Scorpion' by Nissim Ezekiel. 'The Strider' by A.K. Ramanujan 'True Love' by Issac Asimov					6
Text Books						
1	Communication Techniques, A. P. Girdhar, I.K. International Pvt. Ltd., 1st Edition, 2013					
2	'The Striders' by A. K. Ramanujan, Oxford Publication, 1st Edition, 1966					
3	Developing Comm. Skills, Meera Krishna Mohan, Macmillan India, 2nd Edition, 2002					

Reference Books	
1	Communication Skills-I by Miglani & Goyal, Vayu Publication, 1st Edition, 2014.
2	Technical Writing by B.N. Basu, PHI Publication, 1st Edition, 2008

Useful Links	
1	Dailygrammar.com
2	https://youtu.be/PEy5HI_2E-0
3	https://www.simplilearn.com/free-communication-skills-course-skillup?term=communication

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	2	-	-	2	-	3	-	3
CO2	-	-	-	-	-	-	-	2	-	3	-	3
CO3	-	-	-	-	2	-	-	2	-	3	-	3
CO4	-	-	-	-	2	-	-	2	-	2	-	3
CO5	-	-	-	-	2	-	-	2	-	2	-	3

The strength of mapping is to be written as1,2,3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO2	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO3	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO4	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO5	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1

The strength of mapping is to be written as1,2,3; Where 1: Low, 2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B.Tech.				
Class, Semester	I Year, I Sem				
Course Code	251CS3-06				
Course Name	**Programming for Problem Solving**				
Desired Requisites:	Basic Concept of Software and Hardware				
Teaching Scheme		**Examination Scheme (Marks)**				
Lecture	3 Hrs/week	MTE1	MTE2	MTE3	ETE	Total
Tutorial	-	16	16	8	60	100
Interaction	36	**Credits: 3**				

Course Objectives	
1	To introduce the basic structure, characteristics, and evolution of computer systems, including generations of computers and core components such as CPU, ALU, control unit, memory, and I/O devices.
2	To equip students with foundational knowledge of C programming, including data types, operators, control structures, arrays, and string handling for effective algorithm implementation.
3	To develop the ability to write modular and efficient C programs using functions, pointers, structures, file handling, and dynamic memory allocation.

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Define the basic structure, components, and functioning of a computer system, including the role of CPU, memory, input/output devices, and software classifications, flowchart & algorithms.	Understand
CO2	Develop simple C Programs using Tokens, Data Types, Variables, Constants, Operators, Expressions, Pre-processor Directives, and input-output statements with proper program structure.	Apply
CO3	Apply Conditional and looping control statements, arrays (one dimensional and two dimensional), string handling functions and matrix operations to solve computational problems.	Apply
CO4	Analyze and design modular programs using functions, recursion, pointers, arrays, and dynamic memory allocation.	Analyze
CO5	Implement file operations and user-defined data types (structures, unions) to manage data storage and processing using text and binary files in C.	Create

Chapter	Course Contents	Hours
I	**Fundamentals of Computer:** Definitions, Characteristics and Evolutions of Computers, Generations, Function of CPU, ALU, Control Unit, GPU, Input Devices, Output Devices, Memory, Number Systems, System Software, Application Software, Open-Source Software, Basics of Computer Networking, Flowchart and Algorithm.	7
II	**C Programming Fundamentals:** C Tokens, Data types, Variables and Constants, Type Casting, Input-Output statements, Structure of C Program, Pre-processor, Operators and expressions.	6
III	**Control statements and Arrays:** Conditional Statements: if statement and its types, nested if, switch case, break and continue statement. Looping Statements: For loop, while loop and do-while loop, Nested loops. Arrays: Declaration, initialization and accessing elements, one- and two-dimensional arrays, Matrix operations, common string-handling functions.	8

IV	**Modular Programming and Pointers:** Functions, types of functions, Parameter passing, Recursion, Pointers, Dynamic memory allocation, Pointers and arrays, variables scopes.	7
V	**Structures and File Handling:** Defining and declaring structures, Array of structure, Pointer to structure, passing structure as an argument, self-referential structure and union, defining and opening of files, Text and binary files, Read and write data to files, command line arguments, C utility programs.	8

	Text Books
1	Let us C by Yashwant Kanetkar, BPB Publications, 20th Edition, 2024
2	Programming in ANSI C by E. Balagurusamy, Tata McGraw-Hill, 9th Edition, 2024
3	Fundamentals of Computers by P.K. Sinha, BPB Publications, 4th Edition, 2024

	Reference Books
1	Programming in C by Ashok K. Kamthane, Pearson, 3rd Edition, 2015
2	The Complete Reference by Herbert Schildt, McGraw Hill, 4th Edition, 2018
3	Computer Programming in C by V. Rajaraman, PHI Learning Private Limited, 2nd Edition, 2019

	Useful Links
1	https://www.learn-c.org
2	https://www.mygreatlearning.com/academy/learn-for-free/courses/c-for-beginners
3	https://www.codechef.com/learn/course/c

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	1	1	-	-	-	-	-	-	-
CO2	2	2	-	-	-	-	-	-	-	-	-	-
CO3	1	2	3	2	-	-	-	-	-	-	-	1
CO4	2	2	2	3	-	-	-	-	-	-	-	1
CO5	2	2	3	2	-	-	-	-	-	-	-	1

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	3	-	-	1	-	-	1	-	-	2	-	-	1	-	-	2	-
CO2	-	1	-	-	2	-	-	3	-	-	3	-	-	1	-	-	2	-	-	3	-
CO3	-	2	-	-	1	-	-	2	-	-	1	-	-	2	-	-	1	-	-	2	-
CO4	-	1	-	-	2	-	-	1	-	-	2	-	-	3	-	-	2	-	-	1	-
CO5	-	3	-	-	1	-	-	2	-	-	3	-	-	1	-	-	1	-	-	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B.Tech.				
Class, Semester	I Year, I & II Sem				
Course Code	251EE3-08/252EE3-08				
Course Name	**Basic Electrical & Electronics Engineering**				
Desired Requisites:	Foundational knowledge of the *Physics* and *Mathematics*				
Teaching Scheme		**Examination Scheme (Marks)**				
Lecture	3 Hrs/week	MTE1	MTE2	MTE3	ETE	Total
Tutorial	-	16	16	8	60	100
Interaction	36	**Credits: 3**				
Course Objectives					
1	Remember the fundamental principles of DC and AC circuits, electromagnetic induction, and semiconductors.				
2	Understand the behavior of DC and AC circuits, and transformers during various conditions.				
3	Apply the concepts of various laws, theorems, and techniques in solving electrical circuits.				
4	Analyze the working principle, constructional details, and characteristics of various power conversion devices.				
5	Evaluate the capabilities of different feedback mechanisms that eventually help in the creation of oscillatory circuits.				
Course Outcomes (CO) with Bloom's Taxonomy Level					
CO1	Recall the foundational concepts related to the DC and AC circuits, transformers, and power conversion devices.				Remember
CO2	Understand relevant laws and theorems useful for the DC and AC circuits, and transformers.				Understand
CO3	Apply appropriate circuit solving technique(s) to solve electrical networks.				Apply
CO4	Analyze the key attributes of several power conversion devices.				Analyze
CO5	Make evaluation of different feedback mechanisms in the context of oscillators.				Evaluate

Chapter	Course Contents	Hours
I	**DC Circuits** Electrical circuit elements (R, L and C), voltage and current sources, Kirchhoff current and voltage laws, Series-Parallel circuits, Node voltage method, Mesh current method, Superposition, Thevenin's, Norton's and Maximum power transfer theorems.	9
II	**AC Circuits** Representation of sinusoidal waveforms, peak and RMS values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase AC circuits consisting of R, L, C, RL, RC and RLC combinations (series and parallel), resonance. Three phase balanced circuits, voltage and current relations in star and delta connections.	9
III	**Transformers** Ideal and practical transformer, EMF equation, equivalent circuit, losses in transformers, regulation and efficiency.	6
IV	**Power Converters** Semiconductor PN junction diode and transistor (BJT). Characteristics of SCR, power transistor and IGBT. Basic circuits of single-phase rectifier with R load, single phase Inverter, DC-DC converter.	6
V	**Feedback and Oscillators** Introduction to feedback mechanism, categorization of the feedback as positive and negative, fundamentals of an oscillator, Barkhausen criteria, operating principle of Wien Bridge, Crystal, Colpitts, RC phase-shift, and Hartley oscillators.	6

Text Books	
1	Electrical Machinery, Dr. P.S. Bhimbra, Khanna Publishers, Fully Revised Edition 2021, 2023.
2	Power Electronics, Dr. P.S. Bhimbra, Khanna Publishers, 7th Edition, 2025 (AICTE Recommended Textbook)
3	Electronic Devices and Circuit Theory, Robert Boylestad and Louis Nashelsky, Prentice Hall, 11th Edition, 2013

References	
1	Basic Electrical Engineering, D. P. Kothari and I. J. Nagrath, Tata McGraw Hill Education, 4th Edition, 2019
2	A Textbook of Electrical Technology, In S. I. Units, Vol. I, B. L. Theraja and A. K. Theraja, S. Chand Publications., 24th Edition, 2024
3	A Textbook of Electrical Technology, In S. I. Units, Vol. II, B. L. Theraja and A. K. Theraja, S. Chand Publications, 24th Edition, 2024
4	Millmans Integrated Electronics Analog and Digital Circuits and Systems, Jacob Millman, Christos Halkias, Chetan Parikh, 2nd Edition, 2018
5	Electrical and Electronic Technology, Edward Hughes, Pearson Education, 10th Edition, 2010

Useful Links	
1	https://www.youtube.com/watch?v=ozUsp9IIoPM&II=PLTFstmhqwXp-OEjDuBKmaPac-qJzdfvol
2	https://www.youtube.com/@lecturesinelectricaleng
3	https://mnre.gov.in/
4	https://www.youtube.com/watch?v=Z2CORFayCv0&II=PLp6ek2hDcoND7i5-DAD9mPmYF1Wg6ROdO&index=3

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	2	-	-	-	-	-	-
CO2	3	2	-	-	-	2	-	-	-	-	-	-
CO3	3	2	3	-	-	2	-	-	-	-	-	-
CO4	3	-	-	-	-	2	-	-	-	-	-	-
CO5	3	2	-	-	-	2	-	-	-	-	-	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	1	-	-	-	-	-	1	-	-	1	-	1	2	-	1	2	-
CO2	-	2	-	-	1	-	-	-	-	-	1	-	-	1	-	1	2	-	1	2	-
CO3	-	2	-	-	1	-	-	-	-	-	1	-	-	1	-	1	2	-	1	2	-
CO4	-	2	-	-	1	-	-	-	-	-	1	-	-	1	-	1	2	-	1	2	-
CO5	-	2	-	-	1	-	-	-	-	-	1	-	-	1	-	1	2	-	1	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences	
AY 2025-26	
Course Information	
Program	B.Tech.
Class, Semester	I Year, I & II Sem
Course Code	251CS3-09 / 252CS3-09
Course Name	**Web Designing**
Desired Requisites:	Basics Concept of Web

Teaching Scheme		Examination Scheme (Marks)				
Lecture	3 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	16	16	8	60	100
Interaction	36	**Credits: 3**				

Course Objectives	
1	To introduce the fundamental principles of web development, including website planning, domain registration, hosting types, and adherence to web standards and W3C recommendations.
2	To develop students' ability to create and structure web pages using HTML and enhance their appearance and layout using CSS, including responsive and interactive design.
3	To build foundational skills in client-side scripting using JavaScript for form validation, dynamic content handling, and interactive user interfaces.
4	To familiarize students with XML and AJAX technologies for asynchronous data transfer and integration with backend services in real-time web applications.
5	To provide knowledge about web hosting processes, FTP usage, control panels, and basic SEO techniques for effective website deployment, maintenance, and optimization.

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Understand the principles of web page design and distinguish between types of websites, along with the basic concepts and applications of HTML in web development.	Understand
CO2	Understand the basic concept of Java Script and its application.	Understand
CO3	Recognize and apply the elements of Creating Style Sheets (CSS).	Apply
CO4	Understand and apply advanced web technologies including XML, DOM, and AJAX for asynchronous data exchange and web service integration in modern web applications.	Apply
CO5	Introduce basics concept of Web Hosting and apply the concept of SEO.	Apply

Chapter	Course Contents	Hours
I	**Introduction**: Basic principles involved in developing a web site, Planning process, Domains and Hosting, Responsive Web Designing, Types of Websites (Static and Dynamic Websites), Web Standards and W3C recommendations. **Introduction to HTML**: What is HTML, HTML Documents, Basic structure of an HTML document, Creating an HTML document, Markup Tags, Heading-Paragraphs, Line Breaks. **Elements of HTML**: HTML Tags., Working with Text, Working with Lists, Tables and Frames, Working with Hyperlinks, Images and Multimedia, Working with Forms and controls.	6
II	**Concept of CSS**: Creating Style Sheet, CSS Properties, CSS Styling (Background, Text Format, Controlling Fonts) , Working with block elements and objects , Working with Lists and Tables, CSS Id and Class, Box Model(Introduction, Border properties, Padding Properties, Margin properties) CSS Advanced(Grouping, Dimension, Display, Positioning, Floating, Align, Pseudo class, Navigation Bar, Image Sprites, Attribute sector) , CSS Color , Creating page Layout and Site Designs.	7
III	**Introduction to Client-Side Scripting, Introduction to Java Script**, Javascript Types, Variables in JS, Operators in JS, Conditions Statements, Java Script Loops, JS Popup Boxes, JS Events, JS Arrays, Working with Arrays, JS Objects, JS Functions, Using Java Script in Real time, Validation of Forms, Related Examples.	8

IV	**Introduction to XML, Basic and advance XML, Java API for XML Processing, Document Object Model (DOM),** XML Linking Mechanism, Evolution of Web Application, Understanding JavaScript for AJAX, Asynchronous data transfer with XML Http Request, Implementing AJAX Frameworks, Integrating PHP and AJAX, Consuming Web Services in AJAX .application in IT sector.		8
V	**Web Hosting:** Web Hosting Basics, Types of Hosting Packages, registering domains, Defining Name Servers, Using Control Panel, Creating Emails in Cpanel, Using FTP Client, Maintaining a website. **Concepts of SEO:** Basics of SEO, Importance of SEO, Onpage Optimization Basics.		7

Text Books	
1	HTML, XHTML, and CSS Bible by Steven M. Schafer, 5th Edition, Wiley India, 2011.
2	Beginning CSS: Cascading Style Sheets for Web Design by Ian Pouncey, Richard York, Wiley India, 3rd Edition, 2011.

References	
1	CSS: The Definitive Guide by Eric A. Meyer, 5th Edition, O'Reilly, 2023.
2	Learning PHP, MySQL & JavaScript with jQuery, CSS & HTML5, Robin Nixon, O'Reilly, 5th Edition, 2018.

Useful Links	
1	https://www.w3schools.com
2	https://www.w3.org/standards
3	https://javascript.info

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	-	2	-	-	-	-	-	-	-
CO2	3	2	3	-	3	-	-	-	-	-	-	-
CO3	3	2	2	-	3	-	-	-	-	-	-	-
CO4	3	3	2	2	3	-	-	-	-	-	-	-
CO5	2	2	2	-	2	1	-	-	-	-	-	1

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	1	2	-	1	2	-	1	2	-	1	2	-	1	-	-	1	2	-	1	2
CO2	2	2	-	2	2	-	2	2	-	2	2	-	2	-	-	-	1	-	-	1	-
CO3	-	1	2	-	1	2	-	-	2	-	-	2	-	-	-	-	-	2	-	-	2
CO4	-	1	-	-	1	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-
CO5	1	1	2	1	-	2	1	-	2	1	-	2	1	1	-	-	1	2	-	1	2

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

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Department of Applied Sciences	
AY 2025-26	
Course Information	
Program	B.Tech.
Class, Semester	I Year, I & II Sem
Course Code	251ME3-10/252ME3-10
Course Name	**Basic Mechanical Engineering**
Desired Requisites:	A foundational knowledge of physics and basic Mathematics

Teaching Scheme		Examination Scheme (Marks)				
Lecture	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	16	16	8	60	100
Interaction	24	**Credits: 2**				

Course Objectives		
1	To understand the concepts of various sub domains of mechanical engineering.	
2	To obtain basic knowledge of manufacturing processes.	
3	To learn about the concept of pump, refrigeration and air conditioning and power transmission.	
4	To understand and evaluate thermodynamics and IC engines.	

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Remember the basic concepts of sub domains of mechanical engineering and engineering materials.	Remember
CO2	Understand the various conventional and advanced manufacturing processes. Knowledge of pumps, IC engines, refrigerator and air conditioning and IC engines.	Understand
CO3	Apply knowledge of pumps, refrigeration and air conditioning.	Apply
CO4	Analyze the various power transmission system.	Analyze
CO5	Evaluate various thermodynamic systems & performance of IC engine.	Evaluate

Chapter	Course Contents	Hours
I	**Fundamentals:** Introduction & application of sub-domains of mechanical engineering: thermal engineering, mechanical machine design, industrial engineering, manufacturing technology and mechatronics**.** **Robotics and Automation:** Introduction to control system, motors, actuators, sensors and end effectors. **Engineering Materials:** Introduction to various engineering materials and their properties.	3
II	**Primary Manufacturing Processes:** **Metal Casting Process:** Introduction to Casting Process, Pattern, Pattern allowances, Moulding, Properties and ingredients of moulding sand, Furnaces. **Metal Forming Processes:** Introduction to Forging, Rolling, Extrusion, Drawing. Metal Joining Processes: Introduction to various types of Welding: Arc Welding, Gas Welding, Brazing, and Soldering. **Advanced Manufacturing Process:** Introduction to newer machining methods, CNC, Additive Manufacturing.	5
III	**Pumps:** Applications and working of Reciprocating and Centrifugal pumps. **Refrigeration and Air Conditioning:** Introduction, Refrigerants & their properties, Types of refrigeration systems, Types of Air-conditioning, Window AC, Split AC.	6
IV	**Transmission of Power:** Introduction and types of belts and belt drive, velocity ratio, slip, creep, length of open and cross belt drive, ratio of tensions for flat belt, Types of gears, Types of gear trains.	5

V	**Basics of Thermodynamics:** Thermodynamic Systems, Thermodynamic Properties, Gas Laws, Laws of Thermodynamics and their applications. **IC Engines:** Introduction, Classification of IC Engines, Main Components of IC Engines, Working of IC Engines, SI and CI Engines, Basics of Electric Vehicle and Hybrid Vehicle.	5

Text Books

1	Basic Mechanical Engineering- G Shanmugam & S Ravindran- McGraw Hill Education, 4th Edition, 2024
2	Basic Mechanical Engineering- Praveen Kumar- Pearson India, 2nd Edition, 2023.

References

1	Basic Mechanical Engineering - C M Agrawal & Basant Agrawal- Wiley India Edition, Edition: 1, 2008.
2	Basic Mechanical Engineering - Dr. D.S. Kumar - S.K. Kataria & Sons, Edition: 1, 2024 (reprint).
3	Basic Mechanical Engineering – Sadhu Singh – S. Chand Publishing, Edition: 1, 2014.
4	Theory of Machine - R S Khurmi & J. K. Gupta– S. Chand Publishing, Edition: 14, 2020.

Useful Links

1	https://onlinecourses.nptel.ac.in/noc25_me09/preview
2	https://www.youtube.com/watch?v=WKeXnD3dtug

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	-	-	-	1	-	-	-	-	2
CO2	3	3	-	-	-	-	1	-	-	-	-	2
CO3	3	2	1	1	-	-	1	-	-	-	-	2
CO4	3	2	1	1	-	-	-	-	-	-	-	1
CO5	3	3	2	2			1					2

The strength of mapping is to be written as 1,2,3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-
CO2	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-
CO3	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-
CO4	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-
CO5	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B.Tech.				
Class, Semester	I Year, I & II Semester				
Course Code	251CE3-11/252CE3-11				
Course Name	**Basic Civil Engineering**				
Desired Requisites:	Basic concepts of science.				
Teaching Scheme		**Examination Scheme (Marks)**				
Lecture	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	16	16	8	60	100
Interaction	24	**Credits: 2**				
Course Objectives					
1	Introduce the scope, specializations, and role of civil engineering in infrastructure development.				
2	Familiarize students with surveying techniques, including measurements and leveling instruments.				
3	Develop an understanding of building material, planning, structural components, and foundation types.				
4	Provide knowledge on transportation engineering, road safety, and traffic management.				
5	Educate students on environmental engineering, pollution control, and waste management.				
Course Outcomes (CO) with Bloom's Taxonomy Level					
CO1	Describe the scope, specializations, and societal role of civil engineering with examples of practical applications.	Understand			
CO2	Demonstrate the basic techniques of surveying, including linear and angular measurements, levelling, and the use of modern instruments like Total Stations and GPS.	Apply			
CO3	Analyze different civil engineering materials and basic building concepts, distinguishing their properties, applications, and contribution to structural integrity.	Analyze			
CO4	Evaluate transportation systems by identifying modes of transport and recommending safety measures based on accident causes.	Evaluate			
CO5	Design basic sustainable solutions in civil engineering by integrating advancements like smart cities, green buildings, solid waste management, and disaster management techniques.	Create			
Chapter	**Course Contents**	**Hours**			
I	**Introduction to Civil Engineering:** Scope and Specialization of Civil Engineering, Role of Civil Engineer in Society.	2			
II	**Surveying:** Introduction: Objective, Principles & Types of Surveying; Plans & Maps;-Introduction to Total station, GPS & GIS (New). Linear Measurements: Instruments used, Linear Measurement by Tape, Measurements and Tape corrections. Angular Measurements: Instruments used, Introduction to compass surveying, Bearings, Local Attraction. Levelling: Instrument used Object of levelling, and Methods of levelling in brief.	7			
III	**Civil Engineering Materials:** Soil – Origin, Formation, and their types; Brick – Classification, Properties, and their uses; Cement– Varieties and Grade of cement; Steel– Types of steel and its sections; Aggregates –Types & requirements; (New) **Introduction to Building:** Introduction to structures–Substructure and Superstructure: Load bearing and Framed structures (New), Plinth area, carpet area, floor space index, Components of Buildings & their functions, Introduction to types of foundation	6			

IV	**Transportation Engineering:** Introduction, Types and Characteristics of Various Modes of Transportation; Various Road Traffic Signs, Causes of Accidents and Road Safety Measures.		4
V	**Water Pollution:** Water Quality standards, Introduction to Treatment & Solid Waste Management: Classification of Solid Waste, Collection. **Advancement in Civil Engineering:** Smart city and its features; Concepts of Automation and Robotics in Construction; 3D Printing; Green buildings		5

Text Books	
1	Basic Civil Engineering by S.S. Bhavikatti, New Age International Publisher, 9th Edition, 2019
2	Text Book of Solid Waste Management – Iqbal H. Khan, CBS Publisher and Distributors Pvt. Ltd., 2017, 1st Edition

References	
1	Highway Engineering by C.E.G. Justo & S.K. Khanna, Nem Chand & Sons, 9th Edition, 2011
2	Soil Mechanics and Foundations by B.C. Punmia, Ashok K. Jain, Arun K. Jain, Laxmi Publication Pvt. Ltd., 16th Edition, 2005

Useful Links	
1	https://nptel.ac.in/courses/105102088
2	https://civildigital.com/
3	https://www.udemy.com/topic/civil-engineering/

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	-	-	-	1	-	-	1	-	-	-	-
CO2	2	-	2	2	2	2	-	1	-	-	-	2
CO3	2	-	-	-	-	1	-	-	-	-	-	2
CO4	-	-	-	-	-	-	-	1	2	-	-	2
CO5	1	-	-	2	1	-	2	-	-	-	-	1

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	2	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
CO2	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-
CO3	-	-	-	-	1	-	-	1	-	-	2	-	-	2	-	-	-	-	-	-	-
CO4	-	2	-	-	1	-	-	2	-	-	-	-	-	1	-	-	2	-	-	2	-
CO5	-	2	-	-	2	-	-	-	-	-	2	-	-	2	-	-	1	-	-	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B.Tech.				
Class, Semester	I Year- I & II Semester				
Course Code	251AS2-20/ 252AS2-20				
Course Name	**Engineering Physics Lab**				
Desired Requisites:	Students are anticipated to possess a fundamental comprehension of essential Physics principles that are crucial for applications in engineering and technology.				
Teaching Scheme		Examination Scheme (Marks)			
Practical	2 Hrs/week	MTE1	MTE2	MTE3	ETE	Total
Tutorial	-	24	24	12	40	100
Total Hours	24	Credits: 1			

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Remember and define fundamental concepts, laws, and terminology related to wave optics, lasers, optical fibres, material science, semiconductors	Remember
CO2	Understand the concept of the interference and diffraction, semiconductor and optical fibre.	Understand
CO3	Apply key concepts in Lasers, and Optical Fibers, wave optics, measure height of tower, band theory, and the Hall Effect.	Apply
CO4	Analyze and determine semiconductor properties such as type, carrier concentration, and mobility. Numerical aperture of optical fibre.	Analyze
CO5	Determine the value of the wave length of sodium light by Newton's Ring, height of water tank, numerical aperture of an optical fibre, and coherence length and coherence time of laser.	Evaluate

S. No.	Name of Experiment
I	To determine the wave length of monochromatic light with the help of Michelson's interferometer
II	To determine the wave length of sodium light by Newton's Ring.
III	To determine the wave length of prominent lines of mercury by plane diffraction grating with the help of spectrometer
IV	To study the variation of a semiconductor resistance with temperature and hence determine the band gap of the semiconductor in the form of reverse biased P-N junction diode
V	To determine the height of water tank with the help of sextant.
VI	To determine the dispersive power of material of a prim for violet and yellow colours of mercury light with the help of spectrometer
VII	To determine Planck's constant and work function by a photocell.
VIII	To measure the numerical aperture of an optical fibre
IX	To determine the coherence length and coherence time of laser using He – Ne laser.
X	To study the Hall Effect and determine the Hall Voltage and Hall Coefficient.

Reference & Text Books	
1	Practical Physics with Viva-Voce by S. L. Gupta and V. Kumar, Vol. I, A Pragati Edition, 2009
2	Experiments in Engineering Physics by M. N. Avadhanulu, A. A. Dani and Pokely P. M., S. Chand & Co., Revised Edition, 2014
3	Engineering Physics Practical by S. K. Gupta, Krishna Prakashan Media, Schaum's Outlines Series, 9th Edition, 2017
4	Practical Physics by P. R. Sasikumar PHI, Eastern Economy Edition, 2011

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	-	2	-	-	-	-	-	-	-
CO2	2	2	1	1	2	-	-	-	-	-	-	-
CO3	2	2	2	-	2	-	-	-	-	-	-	-
CO4	2	2	1	2	2	-	-	-	-	-	-	-
CO5	2	2	2	-	2	-	-	-	-	-	-	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	1	-	1	-	-	1	-	-	-	1	-	1	1	-	-	1	-
CO2	-	2	-	-	1	-	1	-	-	1	-	-	-	1	-	1	1	-	-	1	-
CO3	-	2	-	-	1	-	1	-	-	1	-	-	-	1	-	1	1	-	-	1	-
CO4	-	2	-	-	1	-	1	-	-	1	-	-	-	1	-	1	1	-	-	1	-
CO5	-	2	-	-	1	-	1	-	-	1	-	-	-	1	-	1	1	-	-	1	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences
AY 2025-26
Course Information

Program	B.Tech.
Class, Semester	I Year, I & II Semester
Course Code	251AS2-21/252AS2-21
Course Name	**Engineering Chemistry Lab**
Desired Requisites:	Foundational knowledge of basic chemistry

Teaching Scheme		Examination Scheme (Marks)				
Practical	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	24	24	12	40	100
Total Hours	24	**Credits: 1**				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Understand about synthesis of Nylon 6, 6 & Bakelite.	Understand
CO2	Analyze different properties of lubricating oil.	Analyze
CO3	Analyze quality of coal by proximate analysis.	Analyze
CO4	Evaluate various quality parameters of water like hardness, DO, Chlorine, pH, TDS and conductivity of given water samples.	Evaluate
CO5	Evaluate the strength of Ferrous Ammonium Sulphate solution with the help of K2Cr2O7 solution.	Evaluate

S. No.	Name of Experiment
I	Determination the hardness of water by EDTA method.
II	Determination of residual chlorine in water.
III	Determination of dissolved oxygen in water.
IV	Determination of the TDS in given water sample.
V	Determination of pH of a given sample by using pH Meter.
VI	Determination of conductivity of given sample of water by conductivity meter.
VII	Determination of the strength of Ferrous Ammonium sulphate solution with the help of K2Cr2O7 solution by using diphenyl amine indicator.
VIII	Proximate analysis of given Coal sample.
IX	Determination of the flash & fire point and cloud & pour point of lubricating oil.
X	Determination of the kinematic viscosity of lubricating oil by Redwood viscometer no. 1 at different temperatures.
XI	Demonstration of preparation of Nylon 6, 6 & Bakelite.
XII	Minor project

Reference & Text Books	
1	Laboratory Manual in Engineering Chemistry - B. Ramadevi and P. Aparna, S. Chand Publishing, 2022
2	Vogel's text book of Practical Organic Chemistry - McGraw Hills – 5th Edition, 2003
3	College Practical Chemistry - V.K. Ahluwalia, Universities Press, 2005

CO-PO Mapping for All B.Tech. Programs												
Program Outcomes (PO)												
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	2	-	-	-	-	2	2	2	2	-	-	2
CO2	2	3	-	-	-	2	2	-	-	-	-	2
CO3	3	3	-	-	-	-	-	-	-	-	-	-
CO4	2	2	-	-	-	2	-	2	2	-	-	2
CO5	3	-	-	-	-	-	-	-	-	-	-	3

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-
CO2	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-
CO3	-	2	-	-	3	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-
CO4	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-
CO5	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B. Tech.				
Class, Semester	I, II Sem				
Course Code	251HS1-22/252HS1-22				
Course Name	**Language Lab**				
Desired Requisites:	Foundational knowledge about the concepts of English Language				
Teaching Scheme		Examination Scheme (Marks)				
Practical	2 Hrs/week	MTE1	MTE2	MTE3	ETE	Total
Tutorial	-	24	24	12	40	100
Total Hours	24	Credits: 1				
Course Outcomes (CO) with Bloom's Taxonomy Level					
CO1	Understand Phonetic Symbols and Transcriptions for accurate pronunciation using IPA and software tools.				Understand
CO2	Enhance Listening and Speaking Skills through role-plays, simulations, JAM, and Extempore activities.				Apply
CO3	Participate effectively in Group Discussions and Mock Interviews, demonstrating appropriate body language and communication techniques.				Analyze
CO4	Improve Writing Skills through structured tasks such as storytelling, narration, and dialogue writing				Evaluate
CO5	Develop and deliver effective Presentations using digital tools, with clarity, structure, and confidence.				Evaluate
S. No.	Name of Experiment				
I	Introduction to Lab/Software and Self-Introduction: -Introduction to the features and tools available in the Language Lab software. -Self-introduction sessions for students, Ice- Breaking Activities, Emphasizing articulation, clarity, and confidence and presentation skills				
II	Listening Skills: Meaning and definition, Types of Listening, Barriers to Listening, Group Activities for improving Listening skills.				
III	Speaking Skills: Meaning and significance, Barriers, Methods to Improve, presentation skills and Object Description.				
IV	Phonetic Symbols and Transcription: Introduction of IPA, Diphthongs, Description of Vowels, Description of Diphthongs.				
V	Phonetics, Phonology, Morphology, Place of Articulation, Manner of Articulation				
VI	Punctuation and its types, Building Paragraphs, Revising Your Writing, Taking Good Notes.				
VII	Fundamentals of Presentation Skills: Definition and Purpose, Format and Structure, Speech Preparation, Delivery Techniques, and audience engagement.				
VIII	Structuring the Dialogues: Significance, Types of Dialogue, Crafting Engaging Dialogue, exercises and activities.				
IX	Communication Skill for seminars/conferences/workshops with emphasis on Paralinguistics/Kinesics				
X	Practical and Writing exercise on activities conducted in Lab				
Reference & Text Books					
1	How to Win Friends & Influence People - Dale Carnegie, Simon & Schuster Reprint Edition 1998.				
2	The Definitive Book of Body Language - Allan and Barbara Pease, Pease International, Illustrated Edition 2006.				
3	Emotional Intelligence: Why It Can Matter More Than IQ - Daniel Goleman, Bantam Books, Revised Edition, 2005.				
4	Effective Communication and Soft Skills - Nitin Bhatnagar & Mamta, Pearson Education, First Edition 2011				

CO-PO Mapping for All B.Tech. Programs												
Program Outcomes (PO)												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	1	-	-	-	-	3	-	3
CO2	-	-	-	-	1	-	-	-	-	3	-	3
CO3	-	-	-	-	1	-	-	-	-	3	-	3
CO4	-	-	-	-	1	-	-	-	-	2	-	3
CO5	-	-	-	-	1	-	-	-	-	2	-	3

The strength of mapping is to be written as1,2,3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO2	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO3	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO4	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO5	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1

The strength of mapping is to be written as1,2,3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

POORNIMA
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Department of Applied Sciences	
AY 2025-26	
Course Information	
Program	B.Tech.
Class, Semester	I & II Semester
Course Code	251HS3-23/252HS3-23
Course Name	**Employability and Soft Skills**
Desired Requisites:	Foundational knowledge about the concepts of Employability and Soft Skills

Teaching Scheme		Examination Scheme (Marks)				
Practical	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	24	24	12	40	100
Total Hours	24	**Credits: 1**				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Understand leadership, interpersonal, and motivational skills required for effective team collaboration and performance in professional settings.	Understand
CO2	Develop smart goals, manage time and stress, and adopt emotional intelligence practices for balanced personal and professional growth.	Apply
CO3	Analyze the body language through effective communication, first impressions, and interview techniques for career advancement and formal interactions.	Analyze
CO4	Create customer handling, selling, and negotiation techniques while resolving conflicts in diverse workplace scenarios.	Create
CO5	Demonstrate self-awareness and confidence through structured participation in interactive and performance-based activities such as mock interviews and presentations.	Create

S. No.	Name of Experiment
I	**Telephonic Etiquette:** Intercultural Communication, Proper Telephonic Language, Virtual Meeting Techniques.
II	**Art and Science of Creating a First Impression:** Guides students in making impactful introductions and establishing credibility through attire, communication, and body language in the first few seconds of interaction, Gender sensitive language in MNCs.
III	**Emotional Intelligence and Empathy:** Helps students recognize and manage their emotions, understand others' feelings, and respond appropriately, improving teamwork and interpersonal interactions through movies, Mission Mangal and Charlie and videos based on Empathy.
IV	**Business Communication:** Effective Business Communication & Conflict Resolution: Present an idea in Team and discuss about it. Review Application Software.
V	**Career Planning & Job Search Techniques:** Self-grooming, Career exploration tools, job board navigation, skills development activities.
VI	**Customer Interaction & Conflict Resolution Skills:** Assertiveness, negotiating skills, Customer Scenarios, negotiation games, cross -cultural role plays.
VII	**Corporate Readiness:** *Emotional Competence, Corporate grooming,* Ordinary to Extraordinary, Financial Literacy.
VIII	**Corporate Readiness and Employment:** Role as Resource Person, Networking, collaboration, adaptability, career exploration, organizational skills.
IX	**Professional Ethics:** Introduction to Professional Ethics, Morals, Values and Ethics – Personal and Professional- Sense of Engineering Ethics – Code of Ethics - Making decisions with ethical dimensions – definition – roadmap to ethical decision making – common standards – internal obstacles – bias – empathy
X	**Group Discussions:** SWOT Analysis, Self-confidence, Self-esteem, SWOT Analysis, Self-confidence, Self-esteem. Stages of GD.

Reference & Text Books	
1	How to Win Friends & Influence People - Dale Carnegie, Simon & Schuster Reprint Edition 1998.
2	The Definitive Book of Body Language - Allan and Barbara Pease, Pease International, Illustrated Edition 2006.
3	Emotional Intelligence: Why It Can Matter More Than IQ - Daniel Goleman, Bantam Books, Revised Edition, 2005.
4	Effective Communication and Soft Skills - Nitin Bhatnagar & Mamta, Pearson Education, First Edition 2011

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	-	2	3	-	3
CO2	-	-	-	-	1	2	-	-	-	3	-	3
CO3	-	-	-	-	1	-	-	-	-	3	-	3
CO4	-	-	-	-	-	-	-	2	-	3	-	3
CO5	-	-	-	-	1	-	-	-	-	2	-	3

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO2	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO3	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO4	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO5	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences						
AY 2025-26						
Course Information						
Program	B.Tech.					
Class, Semester	I Year - I Semester					
Course Code	251CS3-24					
Course Name	**Computer Programming Lab**					
Desired Requisites:	Basic Course of Software					
Teaching Scheme		**Examination Scheme (Marks)**				
Practical	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	24	24	12	40	100
Total Hours	24	**Credits: 1**				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Understand and describe the structure of a C program to explain, write, compile and execute programs using input and output statements.	Understand
CO2	Understand and use the concept of functions, file operations and design new user-defined functions to solve module driven problems.	Understand
CO3	Demonstrate and write programs by applying the decision control statements and loop control statements using different operators.	Apply
CO4	Illustrate and apply the concept of modular programming and recursion.	Apply
CO5	Design object-based programs by creating new data type using structure, union and pointer.	Create

S. No.	Name of Experiment
I	Programs to learn data type, variables and operators, If-else statement.
II	Programs to understand nested if-else statement and switch statement, use of break statement.
III	Programs to learn iterative statements like while and do-while loops.
IV	Programs to understand for loops for iterative statements and nested loop programs.
V	Programs to learn about array and string operations, programs for Matrix operations.
VI	Programs to understand sorting and searching using array.
VII	Programs to learn functions and different parameter passing techniques.
VIII	Programs to understand recursive functions.
IX	Programs to understand Structure and Union operation.
X	Programs to understand array of structure and structure pointers programs.
XI	Programs to learn Pointer operations and array using pointers.
XII	Programs to understand File handling operations.

Reference & Text Books	
1	Let us C by Yashwant Kanetkar, BBP Publications
2	Programming in ANSI C by E. Balagurusamy, Tata McGraw-Hill.
3	Programming in C by Ashok K. Kamthane, Pearson.
4	The Complete Reference by Herbert Schildt, McGraw Hill.
5	Computer Programming in C by V. Rajaraman, PHI Learning Private Limited.

							CO-PO Mapping for All B.Tech. Programs					

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	-	-	-	-	-	-	-	2
CO2	3	3	2	3	-	-	-	-	-	-	2	-
CO3	2	3	2	-	-	-	-	-	2	-	-	1
CO4	-	3	1	3	-	-	-	-	3	-	1	-
CO5	2	2	2	3	-	-	-	-	-	-	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	3	-	-	1	-	-	1	-	-	2	-	-	1	-	-	2	-
CO2	-	1	-	-	2	-	-	3	-	-	3	-	-	1	-	-	2	-	-	3	-
CO3	-	2	-	-	1	-	-	2	-	-	1	-	-	2	-	-	1	-	-	2	-
CO4	-	1	-	-	2	-	-	1	-	-	2	-	-	3	-	-	2	-	-	1	-
CO5	-	3	-	-	1	-	-	2	-	-	3	-	-	1	-	-	1	-	-	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

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INSTITUTE OF ENGINEERING & TECHNOLOGY
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Department of Applied Sciences						
AY 2025-26						
Course Information						
Program	B.Tech.					
Class, Semester	I Year, I & II					
Course Code	251EE3-26/252EE3-26					
Course Name	**Basic Electrical & Electronics Engineering Lab**					
Desired Requisites:	Foundational knowledge about certain topics in Physics					
Teaching Scheme		**Examination Scheme (Marks)**				
Practical	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	24	24	12	40	100
Total Hours	24	**Credits: 1**				
Course Outcomes (CO) with Bloom's Taxonomy Level						
CO1	Utilize a Cathode Ray Oscilloscope (CRO) along with various meters to identify and remember the functioning of components such as resistors, inductors, capacitors, diodes, transistors.				Remember	
CO2	Understand the fundamentals of wiring systems, components of an LT switchgear, behavior of the no-load current waveform using a CRO, calculation of transformer voltages, currents, power and efficiency.				Understand	
CO3	Understand torque-speed curve of a single-phase induction motor.				Understand	
CO4	Analyze the cut-out sections and speed behavior of DC machine and single-phase induction machine.				Analyze	
CO5	Evaluate the voltage and current relationships for various three-phase transformer connections.				Evaluate	
S. No.	**Name of Experiment**					
I	(a) Familiarization with general safety rules of laboratory. (b) To study the graphical symbols used to indicate electrical equipment and components and introducing various tools and supplies finding applications in electrical and electronics workshops.					
II	Introduction, testing, and practical utilities of fundamental passive elements, various diodes and transistors, measuring instruments, Cathode Ray Oscilloscope, and Function Generator.					
III	To study the fundamentals of various wiring systems.					
IV	(a) To study Switch Fuse Unit (SFU), Miniature Circuit Breaker (MCB), Moulded Case Circuit Breaker (MCCB), and Earth Leakage Circuit Breaker (ELCB). (b) To understand the need of the earthing and its types.					
V	(a) To observe the no-load current waveform of a transformer on the Cathode Ray Oscilloscope. (b) To measure the primary and secondary voltages of a transformer and thus, determine the corresponding turns ratio.					
VI	(a) To study the constructional features and connections of a three-phase transformer. (b) To perform the star/delta connection of a three-phase transformer to validate the relationships between (i) Line and phase voltages & (ii) Line and phase currents.					
VII	(a) To study the VI Characteristics of a PN junction diode. (b) To study the Characteristics of a Bipolar Junction Transistor (BJT) in the Common Emitter configuration.					
VIII	To study the one, two, and four quadrant DC-DC choppers.					
IX	Demonstration of the cut-out sections of a three-phase induction motor and a DC machine.					
X	To control the speed of a single-phase induction motor by using an auto-transformer.					
Reference & Text Books						
1	A Text Book of Electrical Technology in S. I. Units (Vol. I, II) - B. L. Theraja, S. Chand Publishers, 24th Edition 2024.					
2	Power Electronics - Dr. P. S. Bhimbra, Khanna Publishers, 7th Edition 2022.					
3	Switchgear Protection and Power Systems (Theory, Practice & Solved Problems) - Sunil S. Rao, Khanna Publishers, 14th Edition, 2025.					

4	Electrical Engineering Fundamentals (2nd Edition) - Vincent Del Toro, Pearson, 2nd Edition 2015.
5	Basic Electrical Engineering - C. L. Wadhwa, New Age International Publishers, 4th Edition, 2007.
6	Basic Electrical Engineering - Ravish R Singh, McGraw Hill, 3rd Edition 2018.

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	-	-	-	2	-	-	1	-	-	-
CO2	3	2	-	-	-	2	-	-	1	-	-	-
CO3	3	2	-	-	-	2	-	-	1	-	-	-
CO4	3	2	-	-	-	2	-	-	1	-	-	-
CO5	3	2	-	-	-	2	-	-	1	-	-	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	1	-	-	1	-	-	1	-	-	2	-	-	2	-	1	2	-
CO2	-	2	-	-	1	-	-	1	-	-	1	-	-	2	-	-	2	-	1	2	-
CO3	-	2	-	-	1	-	-	1	-	-	1	-	-	2	-	-	2	-	1	2	-
CO4	-	2	-	-	1	-	-	1	-	-	1	-	-	2	-	-	2	-	1	2	-
CO5	-	2	-	-	1	-	-	1	-	-	1	-	-	2	-	-	2	-	1	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences	
AY 2025-26	
Course Information	
Program	B.Tech.
Class, Semester	I Year, I & II Sem
Course Code	251CS3-27/ 252CS3-27
Course Name	**Web Designing Lab**
Desired Requisites:	Basic course of web

Teaching Scheme		Examination Scheme (Marks)				
Practical	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	24	24	12	40	100
Total Hours	24	Credits: 1				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Understand the principles of web page design and distinguish between types of websites, along with the basic concepts and applications of HTML in web development.	Understand
CO2	Understand the basic concept of Java Script and its application.	Understand
CO3	Recognize and apply the elements of Creating Style Sheets (CSS).	Apply
CO4	Apply advanced web technologies including XML, DOM, and AJAX for asynchronous data exchange and web service integration in modern web applications.	Apply
CO5	Introduce basics concept of Web Hosting and apply the concept of SEO.	Apply

S. No.	Name of Experiment
I	Design a simple website with multiple HTML pages using basic tags: headings, paragraphs, lists, images, hyperlinks, tables, and forms.
II	Develop login & registration forms with various input types and embed audio/video/iframe.
III	Use inline, internal, and external CSS to style text, background, fonts. Apply CSS to HTML forms and tables.
IV	Create responsive layouts using Box Model, Positioning, Flexbox, and Media Queries. Simulate mobile-friendly designs.
V	Design a dynamic navigation bar using CSS (pseudo-classes, hover effects). Include image sprites and styling effects.
VI	Implement JavaScript for popup boxes, form validation, conditional checks, loops, and event handling.
VII	Work with arrays, objects, and DOM manipulation. Change content and styles dynamically using JavaScript.
VIII	Create XML file and use JavaScript to load it asynchronously using AJAX. Integrate simple PHP backend for data exchange.
IX	Host a static website on a free hosting platform. Use FTP (FileZilla) to upload files. Configure domain, email, cPanel.
X	Add meta tags, alt text, semantic tags, and titles. Analyze basic SEO techniques and structure.

Reference & Text Books	
1	Steven M. Schafer, "HTML, XHTML, and CSS Bible, 5th Edition, Wiley India, 2010.
2	Ian Pouncey, Richard York, "Beginning CSS: Cascading Style Sheets for Web Design", Wiley India, 3rd Edition, 2011.
3	Jon Duckett, HTML and CSS: Design and Build Websites, Wiley, 1st Edition, 2011.
4	Robin Nixon, Learning PHP, MySQL & JavaScript with jQuery, CSS & HTML5, O'Reilly, 3rd Edition, 2018.

CO-PO Mapping for All B.Tech. Programs												
Program Outcomes (PO)												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	2	2	-	-	-	-	-	-	-	2
CO2	3	2	2	3	-	-	-	-	-	-	2	-
CO3	3	3	2	-	-	-	-	-	3	-	-	2
CO4	-	3	1	3	-	-	-	-	2	-	1	-
CO5	3	2	2	3	-	-	-	-	-	-	3	-
The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High												

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
Program Specific Outcomes (PSOs)																					
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	3	-	-	1	-	-	1	-	-	1	-	-	2	-	-	1	-	-	1	-
CO2	-	2	-	-	1	-	-	3	-	-	3	-	-	1	-	-	2	-	-	2	-
CO3	-	3	-	-	3	-	-	2	-	-	2	-	-	2	-	-	1	-	-	2	-
CO4	-	1	-	-	2	-	-	1	-	-	2	-	-	1	-	-	2	-	-	3	-
CO5	-	3	-	-	1	-	-	2	-	-	3	-	-	1	-	-	2	-	-	2	-

The strength of mapping is to be written as1,2,3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences	
AY 2025-26	
Course Information	

Program	B.Tech.
Class, Semester	I Year, I & II Sem
Course Code	251ME3-28/252ME3-28
Course Name	**Advanced Manufacturing Practices Workshop Lab**
Desired Requisites:	Basic knowledge of science

Teaching Scheme		Examination Scheme (Marks)				
Practical	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	24	24	12	40	100
Total Hours	24	**Credits: 1**				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Understand the appropriate tools, materials, instruments required for Carpentry, LASER cutting and fitting shops.	Understand
CO2	Understand the concepts of Welding and sheet metal shops for joining process.	Understand
CO3	To Study and acquire knowledge on various basic machines like lathe, drilling, shaping on wooden and metallic work pieces.	Apply
CO4	Apply the concepts of Foundry and Additive manufacturing processes with practical knowledge.	Apply
CO5	Apply knowledge to make a final project with help of various machine tools.	Create

S. No.	Name of Experiment
I	**Carpentry & LASER Cutting Shop** To Prepare a T - Lap joint, as per Drawing using soft wood.
II	To Prepare a specimen by cutting and engraving on MDF/ Acrylic Sheet by LASER cutting machine.
III	**Fitting** (a) To Finishing of two sides of a square piece of mild steel specimen by filing. (b) To cut a square notch, drilling and tapping as per drawing in mild steel specimen.
IV	**Welding Shop** To prepare a Lap joint and Butt joint by arc welding method.
V	Demonstration and study of brazing & soldering.
VI	**Sheet Metal Shop** To prepare a mechanical junction and solder it on the sheet metal as per given drawing.
VII	**Machine Shop Practice** To Prepare a mild steel job on lathe machine with turning, facing and chamfering operations. Introduction of Drilling, Shaping and Grinding machines. To prepare a wooden specimen on lathe machine by wood crafting.
VIII	**Foundry and 3D Printing Shop** To demonstrate the different foundry tools and study the different sand properties. To prepare a 3D model using 3D printer with Auto CAD software.
IX	**Minor Project** To prepare a minor project by the application of these shops
Reference & Text Books	
1	Elements of workshop Technology Vol-1 - S K Hajra Choudhury, Media Promotors & Publishers Pvt. Ltd.
2	Elements of workshop Technology Vol-2 - S K Hajra Choudhury, Media Promotors & Publishers Pvt. Ltd.
3	Laser Cutting Fundamentals - Brendon Hatcher, Kindle Edition
4	ADDITIVE MANUFACTURING: Foundation knowledge for the beginners - Sunpreet Singh, Chander Prakash, Seeram Ramakrishna, World Scientific Publishing CO. Pvt. Ltd.

CO-PO Mapping for All B.Tech. Programs												
Program Outcomes (PO)												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	1	-	-	-	-	-	-	-	-	1
CO2	3	2	1	-	-	-	-	-	-	-	-	1
CO3	2	1	1	-	-	-	-	-	-	-	-	1
CO4	1	1	-	-	-	-	-	-	-	1	-	-
CO5	1	-	-	-	-	-	-	-	2	1	-	-

The strength of mapping is to be written as1,2,3; Where 1: Low,2: Medium,3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	-	2	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-
CO2	-	2	-	-	-	2	-	-	2	-	-	2	-	2	-	-	-	2	-	1	-
CO3	-	3	-	-	-	3	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-
CO4	-	2	-	-	-	2	-	-	2	-	-	2	-	2	-	-	-	2	-	1	-
CO5	-	2	-	-	-	2	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-

The strength of mapping is to be written as1,2,3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B.Tech.				
Class, Semester	I Year, I & II Sem				
Course Code	251CE3-29/252CE3-29				
Course Name	**Basic Civil Engineering Lab**				
Desired Requisites:	Basic knowledge of science				
Teaching Scheme	**Examination Scheme (Marks)**				
Practical	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	24	24	12	40	100
Total Hours	24	**Credits: 1**				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Understand surveying techniques using tape, compass, and leveling instruments for field measurements.	Understand
CO2	Apply the shape characteristics of aggregates through Flakiness and Elongation Index tests.	Apply
CO3	Analyze the use and operation of modern electronic surveying instruments like EDM and Total Station.	Analyze
CO4	Evaluate physical properties of bricks using standard laboratory tests.	Evaluate
CO5	Identify and explain various sanitary and water supply fittings used in civil.	Create

S. No.	Name of Experiment
I	Linear Measurement by Tape: Ranging and Fixing of Survey Station along a straight line and across the obstacles. Laying perpendicular offset along the survey line.
II	To measure and record the magnetic bearing of survey lines using a Surveyor's Compass, by applying the Reduced Bearing (RB) or Quadrantal Bearing (QB) system.
III	To obtain the magnetic bearings of survey lines using a Prismatic Compass based on the Whole Circle Bearing (WCB) system.
IV	To determine the reduced levels roads by Height of Instrument and Rise & Fall method using Tilting/Dumpy/Auto level
V	To study and take a measurement using various electronic surveying instruments like EDM, Total Station, etc.
VI	To study Physical test such as dimension test, scratch test, soundness test and drop test on bricks.
VII	To determine the Flakiness Index of coarse aggregates for assessing their suitability in construction
VIII	To determine the Elongation Index of coarse aggregates for assessing their suitability in construction
IX	To study the classification, and functions of sanitary fittings in plumbing systems.
X	To study the classification, and functions of water supply fittings in plumbing systems.

Reference & Text Books	
1	Highway Material & Pavement Testing by S.K. Khanna & Justo, Nem Chand & Bros. Publishers
2	Basic Civil Engineering by S. S. Bhavikatti, New Age International Publishers

CO-PO Mapping for All B.Tech. Programs												
Program Outcomes (PO)												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	-	-	1	-	-	-	-	-	-	1
CO2	-	1	-	2	-	-	-	-	2	-	-	2
CO3	-	-	2	-	2	-	-	-	-	-	-	-
CO4	1	-	-	-	-	-	1	-	2	-	-	-
CO5	2	-	-	-	-	2	2	-	-	-	-	2
The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High												

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
Program Specific Outcomes (PSOs)																					
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	1	-
CO2	-	2	-	-	2	-	-	1	-	-	2	-	-	2	-	-	1	-	-	-	-
CO3	-	-	-	-	2	-	-	-	-	-	1	-	-	1	-	-	-	-	-	2	-
CO4	-	2	-	-	-	-	-	2	-	-	-	-	-	-	-	-	2	-	-	-	-
CO5	-	2	-	-	2	-	-	-	-	-	2	-	-	2	-	-	-	-	-	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B.Tech.				
Class, Semester	I Year, I Sem				
Course Code	251ME3-30				
Course Name	Computer Aided Engineering Graphics				
Desired Requisites:	Foundational knowledge about the concepts of Designing.				
Teaching Scheme		Examination Scheme (Marks)				
Practical	2 Hrs/week	MTE1	MTE2	MTE3	ETE	Total
Tutorial	-	24	24	12	40	100
Total Hours	24	Credits: 1				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Discuss the concept of engineering terminology, engineering scales and conic sections and basic designing software.	Understand
CO2	Apply the necessary skills in drawing and explaining orthographic projection of points, lines, and planes.	Apply
CO3	Analyze and Draw projections of solids	Analyze
CO4	Draw and classify the sections of solids.	Evaluate
CO5	Explain various commands and create drawing in AutoCAD.	Create

S. No.	Activity Content
I	**Overview of Computer Graphics:** Covering theory of CAD software [such as: The menu System, Toolbars (standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Crosshairs, Coordinate System), Dialog boxes and windows, Shortcut menus (Button Bars), Command Line (where applicable), The Status Bar, Different methods of zoom as used in CAD, Select and erase objects.: Isometric Views of lines, Planes, Simple and compound Solids.
II	**Introduction:** Principles of drawing, Drawing Instruments, Title Block, lettering, type of lines. Dimensioning systems. **Scales & Conic sections:** Representative Fraction, Types of scales, Length of Scale, Scales-Plain, Diagonal and Vernier Scales. Conic sections-methods to draw various conic sections, parabola, hyperbola, ellipse (Eccentricity Method); (one drawing using AutoCAD, one assignment in sketch book)
III	**Projections of Point & Lines:** Introduction to projection, Types of Projection system, difference between first angle and third angle projection methods. Position of Point, Notation System, Systematic approach for projection of points, front view & Top view of point, Position of straight lines, line parallel to Both the RPs, Line perpendicular to either of the RPs, Line inclined to one RP and parallel to the other, Line inclined to Both the RPs, Traces of a line (one drawing using AutoCAD, one assignment in sketch book).
IV	**Projection of Planes:** Positions of planes, Terms used in projections of planes, plane parallel to RP, plane inclined to one RP and perpendicular to the other RP, plane perpendicular to Both the RPs, plane Inclined to Both the RPs, True shape of the plane, Distance of a point from plane, Angle between two planes. (one drawing using AutoCAD, one assignment in sketch book).
V	**Projections of Regular Solids: Basic solids,** frustum and truncated solids, those inclined to both the Planes-Auxiliary Views. (one drawing using AutoCAD, one assignment in sketch book) **Section of Solids:** Theory of sectioning, section of prisms and cubes, section of pyramids and Tetrahedron section of Cylinders, section of cones, section of spheres (one drawing using AutoCAD, one assignment in sketch book).
Reference & Text Books	
1	Engineering Drawing by N.D. Bhatt, Charotar Publishing house Pvt. Ltd.
2	Engineering Drawing by P.S. Gill, S K KATARIA & SONS - NEW DELHI

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	-	-	-
CO3	2	-	-	-	-	-	-	-	-	-	-	-
CO4	2	-	-	-	-	-	-	-	-	-	-	-
CO5	2	-	-	-	2	-	-	-	-	-	-	-

The strength of mapping is to be written as 1,2,3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	-	2	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-
CO2	-	2	-	-	-	2	-	-	2	-	-	2	-	2	-	-	-	2	-	1	-
CO3	-	3	-	-	-	3	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-
CO4	-	2	-	-	-	2	-	-	2	-	-	2	-	2	-	-	-	2	-	1	-
CO5	-	2	-	-	-	2	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-

The strength of mapping is to be written as 1,2,3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences		
AY 2025-26		
Course Information		

Program	B.Tech.
Class, Semester	I Year, I Sem
Course Code	251SK3-32
Course Name	Design Thinking Lab
Desired Requisites:	Practical Application-based knowledge

Teaching Scheme		Examination Scheme (Marks)				
Practical	1 Hr/week	MTE1	MTE2	MTE3	ETE	Total
Tutorial	-	24	24	12	40	100
Total Hours	12	Credits: 0.5				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Understand the appropriate software, materials, instruments required for LASER cutting and engraving Processes.	Understand
CO2	Understand the concepts of Additive Manufacturing process.	Understand
CO3	Understand the concepts of Reverse Engineering with practical applications.	Understand
CO4	Apply knowledge to make a final project with help of various machine tools.	Apply
CO5	To study and acquire knowledge of Eagle or KiCAD software for PCB designing.	Create

S. No.	Activity Content
I	**Laser Cutter:** Create a 2D Design of Complex Patterns using RD Works, followed by Iterative Prototyping and Precision Cutting with Laser Technology.
II	**3D Printing:** Reproduce an Innovative 3D Design with AutoCAD, followed by Ultimaker Cura, and Tangible Creation through 3D Printing.
III	**PCB Software Learning:** Create an innovative circuit diagram of PCB Design using EAGLE/KiCAD Software.
IV	**3D Scanner:** Explain Reverse Engineering by creating prototype of a model using 3D scanner.
V	**Vinyl Cutter:** Human-Centered Vinyl Cutting and Decal Creation through Ideation and Prototyping. Students or faculty must submit a Project Proposal Form including the project title, team details, objectives, methodology, required resources, expected outcomes, and a timeline with milestones (9–10 phases).

Reference & Text Books	
1	Laser Cutting Fundamentals by Brendon Hatcher, Kindle Edition
2	Additive Manufacturing: Foundation Knowledge for the Beginners by Sunpreet Singh, Chandan Prakash, Seeram Ramakrishna, World Scientific Co. Pvt. Ltd.

CO-PO Mapping for All B.Tech. Programs												
Program Outcomes (PO)												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	1	-	-	-	-	-	-	-	-	1
CO2	3	-	1	-	-	-	-	-	-	-	-	1
CO3	2	1	1	-	-	-	-	-	-	-	-	1
CO4	1	1	-	-	-	-	-	-	-	-	1	-
CO5	1	-	-	-	-	-	-	-	-	-	1	1
The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High												

	Program Specific Outcomes (PSOs)																				
Program	**CS/CSR**			**AI & DS**			**CS AI**			**CS DS**			**IOT**			**EC**			**EE**		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	-	2	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-
CO2	-	2	-	-	-	2	-	-	2	-	-	2	-	2	-	-	-	2	-	1	-
CO3	-	3	-	-	-	3	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-
CO4	-	2	-	-	-	2	-	-	2	-	-	2	-	2	-	-	-	2	-	1	-
CO5	-	2	-	-	-	2	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences	
AY 2025-26	
Course Information	

Program	B.Tech.
Class, Semester	I Year, II Sem
Course Code	252SK3-33
Course Name	Innovation Development Lab
Desired Requisites:	Practical Application-based knowledge

Teaching Scheme		Examination Scheme (Marks)				
Practical	1 Hr/week	MTE1	MTE2	MTE3	ETE	Total
Tutorial	-	24	24	12	40	100
Total Hours	12	Credits: 0.5				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	To Study and acquire knowledge of Robotics links and mechanisms.	Remember
CO2	Understand the concepts of SMT pick & place machine.	Understand
CO3	Understand the concepts of coding with practical applications.	Understand
CO4	Apply knowledge to make a final project with help of various machine tools.	Apply
CO5	To Study and acquire knowledge of PCB designing.	Create

S. No.	Activity Content
I	**Robotic Arm:** Investigating the Impact of creative Design on Rapid Prototyping with Robotic Arm.
II	**SMT Pick & Place Machine:** Describe the Pick-and-Place Machines in Surface-Mount Technology (SMT) for prototyping.
III	**PCB Design:** Create a PCB Design and Fabrication through Empathetic Concept Development, Iterative Prototyping, and Refined Completion. An Experimental Study on innovative Casing Design and Ergonomic Evaluation for Capstone Hardware Projects.
IV	Project Documentation and Presentation: Reporting and Recording.
V	Coding & Practical Exam. (a) Taking students from PCB design to running the project in the first 15 days, (b) And after that the casing has to be completed in 7 days, (c) And after that the project has to be submitted along with the report within 7 days.

Reference & Text Books	
1	Laser Cutting Fundamentals – Brendon Hatcher, Kindle Edition
2	Additive Manufacturing: Foundation Knowledge for the Beginners – Sunpreet Singh, Chandan Prakash, Seeram Ramakrishna, World Scientific Co. Pvt. Ltd.

CO-PO Mapping for All B.Tech. Programs												
Program Outcomes (PO)												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	-	1	-	-	-	-	-	-	-	-	1
CO2	-	2	1	-	-	-	-	-	-	-	-	1
CO3	2	1	-	-	-	-	-	-	-	-	-	1
CO4	1	1	-	-	-	-	-	-	-	1	-	-
CO5	1	-	-	-	-	-	-	-	2	1	-	-

The strength of mapping is to be written as 1,2,3; Where 1: Low, 2: Medium, 3: High

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	-	2	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-
CO2	-	2	-	-	-	2	-	-	2	-	-	2	-	2	-	-	-	2	-	1	-
CO3	-	3	-	-	-	3	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-
CO4	-	2	-	-	-	2	-	-	2	-	-	2	-	2	-	-	-	2	-	1	-
CO5	-	2	-	-	-	2	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-

The strength of mapping is to be written as1,2,3; Where 1: Low, 2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B.Tech.				
Class, Semester	I Year, I Sem				
Course Code	251FC8-0X				
Course Name	**NSS**				
Desired Requisites:	Foundational knowledge about Social Service				
Teaching Scheme		**Examination Scheme (Marks)**				
Practical	1 Hr/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	-	-	-	-	100
Total Hours	12	**Credits: 0.5**				
Course Outcomes (CO) with Bloom's Taxonomy Level					
CO1	Remember the purpose, objectives, and structure of the National Service Scheme				Remember
CO2	Understand the importance of cleanliness, hygiene, and environmental sustainability.				Understand
CO3	Apply NSS principles to engage in activities that promote health, safety, and awareness.				Apply
CO4	Analyze social issues through participation in community-based programs and outreach visits.				Analyze
CO5	Evaluate the impact of NSS activities on personal, institutional, and societal development.				Evaluate
S. No.	**Name of Activity**				
I	**Student Induction Program and NSS Vision:** Introduction to NSS, its objectives, motto, symbol, and activities undertaken by NSS.				
II	**Cleanliness Drive (Swachh Bharat Abhiyan):** Meaning and Importance of Cleanliness. Activity of Cleanliness in the campus or adopted village or in your colony or nearby park.				
III	**Tree Plantation & Environmental Awareness:** Importance of Environment Awareness**.** Tree plantation activity and a short campaign on environment conservation.				
IV	**Health and Hygiene Awareness Program:** Need of importance of hygiene**.** Organizing or participating in a health camp / hygiene awareness session.				
V	**Visit to an NGO / Old Age Home / Orphanage:** Engage in an empathetic visit with interactive sessions in the one of the following by individual or team and prepare a presentation on its experience.				
VI	**Disaster Management Mock Drill / First Aid Training**: Participate in a demo/mock drill on disaster preparedness or basic first aid session.				
VII	**Road Safety & Traffic Awareness Campaign:** Conduct a campaign near a traffic junction or college to educate about road safety.				
VIII	**Organize National integration and social harmony events /workshops /seminars.** (Minimum 02 programs).				
IX	**Reflection on NSS Activities:** Reflection and take away on previous labs.				
X	**Documentation on NSS Activities:** Preparation of reports				
Reference & Text Books					
1	National Service Scheme Manual - Govt. of India, Ministry of Youth Affairs & Sports, Revised edition 2006				
2	Youth and Social Service - R.C. Das, Discovery Publishing House, First Edition 2012				
3	Community Organization and Development - R. S Dwivedi, Macmillan India, First edition 1995				

4	Social Work and Community - S.K. Bhatia, Deep and Deep Publication, First Edition 2005

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	2	-	-	-	-
CO2	-	-	-	-	-	-	-	2	-	-	-	-
CO3	-	-	-	-	-	-	-	2	-	-	-	-
CO4	-	-	-	-	-	-	-	2	-	-	-	-
CO5	-	-	-	-	-	-	-	2	-	-	-	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO2	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO3	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO4	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO5	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Foundation course assessment will be a part of the Academic Manual and Examination Policy of the institute.

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B. Tech.				
Class, Semester	I Sem				
Course Code	251FC8-0X				
Course Name	**Sports and Yoga**				
Desired Requisites:	Foundational knowledge about Sports and Yoga				
Teaching Scheme		**Examination Scheme (Marks)**				
Practical	1 Hr/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	-	-	-	-	100
Total Hours	12	**Credits: 0.5**				
Course Outcomes (CO) with Bloom's Taxonomy Level					
CO1	Remember the well-being of the body and self				Remember
CO2	Make the students understand the importance of sound health and fitness principles as they relate to better health.				Understand
CO3	Expose the students to a variety of physical and yogic activities aimed at stimulating their continued inquiry about Yoga, physical education, health, and fitness				Apply
CO4	Exhibit sportsmanship, motivation, and teamwork through participation in physical fitness and sports activities				Analyze
CO5	To develop among students an appreciation of physical activity as a lifetime pursuit and a means to better health				Evaluate
S. No.	**Activity Content**				
I	**Introduction to Yoga** Definition of Yoga, Interpretation of Yoga, Importance of Yoga, Definition of Asana, Kinds of Asana, Physical and mental benefits of Asana. Practice any two asanas; Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana				
II	**Yoga & Lifestyle**: Definition of Pranayam, Kinds of Pranayam, Physical and Mental Benefits of Pranayam, definition of dhyana. Practice Dhyana				
III	**Methods of Teaching Yoga, Yoga and Holistic health**: Knowledge of Do's and don'ts of yogic practices Basic Knowledge of Human body. Yogic Positive Attitudes (Maitri, Karuna, Mudita, Upeksha) Dincharya and Ritucharya with respect to Yogic life style.				
IV	**Asanas -: Fitness, Wellness and Nutrition:** Asanas with Therapeutic Value (Any five asanas): Karnapeedasana, Padmasana, Dhanurasana, Sarvangasana, Paschimottanasana, Chakrasana, Halasana, Matsyasana, engage in at least one wellness Program and write a report on it.				
V	**Introduction to Health and Wellness** 1. Meaning and definition of Health and Health education. 2. Objectives and Importance of Health education. 5. Stretching exercises 6. Warming up and Limbering down a) General warm up exercises b) Specific warm up exercises				
VI	**Introduction to Diet Plan:** Meaning and definition of Diet. Value of Nutrition. Make a Chart of healthy diet followed by the student. Result Analysis of the Diet Plan.				
VII	**Physical fitness & Lifestyle** 1. Meaning and definition of Physical Fitness. 2. Importance and component of Physical fitness. 3. Meaning and importance of Healthy lifestyle 4. Preventing Health threats through lifestyle changes.				
VIII	**Sports for All (Any Two):** (i) To participate in any internal Tournaments (one team game and one Individual Game) of choice. (ii) To participate/ attend at least 15 hours in Fitness training at Field or at Gymnasium.				

	(iii) Participate in at least one track and one field event on Annual Sports day.	
	To participate in Inter College Tournament	
IX	**Media and Careers in Physical Education (Any Two):**	
	(i) Organize an event / internal / tournament in your college. Prepare a News Report of an observed Sports competition.	
	(ii) Create a presentation on any topic from Physical Education using an audio-visual aid.	
	Demonstrate Warming-up / Conditioning / Cooling-down exercises.	
X	**Documentation:** Presentation of activities completed during the session.	

Reference & Text Books

1	Yoga: The Spirit and Practice of Moving into Stillness - Erich Schiffmann, Gallery Books; Original ed. edition, Simon & Schuster Netherlands. First Edition 1996
2	Concepts of Physical Fitness: Active Lifestyle for Wellness - Corbin, C. B., G. J. Welk, W. R Corbin, K. A. Welk, McGraw Hill, 17 Edition 2013.
3	Sports Facility Management - Ammon, R., Southall, R.M. and Blair, D.A, Fitness Information Technology Publishers, 2 Illustrated Edition, 2004.

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	2	-	-	-	1
CO2	-	-	-	-	-	-	-	2	-	-	-	1
CO3	-	-	-	-	-	-	-	2	-	-	-	1
CO4	-	-	-	-	-	-	-	2	-	-	-	1
CO5	-	-	-	-	-	-	-	2	-	-	-	1

The strength of mapping is to be written as1,2,3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO2	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO3	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO4	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO5	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

POORNIMA
INSTITUTE OF ENGINEERING & TECHNOLOGY

An Autonomous Institution approved by RTU, AICTE & UGC • NAAC 'A' Accredited

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B.Tech.				
Class, Semester	I Year, II Sem				
Course Code	252AS2-01				
Course Name	**Engineering Mathematics-II**				
Desired Requisites:	Students are expected to know the basic concept in Mathematics (12th)				
Teaching Scheme		**Examination Scheme (Marks)**			
Lecture	3 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	1 Hr/week	16	16	8	60	100
Interaction	48	**Credits: 4**				

Course Objectives	
1	To introduce the fundamental concepts of matrices, including rank, eigenvalues, eigenvectors, and their role in solving systems of linear equations. To familiarize students with the Cayley-Hamilton theorem and orthogonal transformations, which are widely used in engineering analysis and computations.
2	To develop an understanding of first-order differential equations, including linear, Bernoulli's, and exact equations. To provide knowledge of special forms of differential equations such as Clairaut's type, which appear in physics and engineering applications.
3	To equip students with methods for solving higher-order linear differential equations with constant and variable coefficients. To introduce advanced techniques such as variation of parameters and Cauchy-Euler equations.
4	To introduce the concept of partial differential equations (PDEs) and their formation. To provide analytical techniques such as Lagrange's and Charpit's methods for solving first-order PDEs.
5	To classify second-order PDEs and apply separation of variables to solve engineering problems involving Laplace, heat, and wave equations. To enable students to model and analyse various physical phenomena such as heat conduction, wave propagation, and potential theory.

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Recall fundamental concepts and results related to matrices and basic concepts of differential equations.	Remember
CO2	Explain the principles of the Rank-nullity theorem, Cayley-Hamilton theorem and the classification of ODE & PDE with appropriate terminology and structure.	Understand
CO3	Apply appropriate methods to solve systems of linear equations, first-order and second-order ODE & PDE using variation of parameters.	Apply
CO4	Analyze the structure and properties of diagonalize matrix and examine differential equations using Charpit's method and separation of variables	Analyze
CO5	Evaluate the solution for higher-order ODEs and PDEs and determine Laplace, heat, and wave equations in Cartesian and Polar form.	Evaluate

Chapter	**Course Contents**	**Hours**
I	**Matrices:** Rank of a matrix, rank-nullity theorem; System of linear equations; Symmetric, skew-symmetric and orthogonal matrices; Eigenvalues and eigenvectors; Diagonalization of matrices; Cayley-Hamilton Theorem, and Orthogonal transformation. Complex Matrices: Hermitian, Skew Hermitian.	8
II	**First order ordinary differential equations:** Linear and Bernoulli's equations, Exact equations, Equations reducible to exact, Equations not of first degree: solvable for p, x and y, Clairaut's type.	6
III	**Ordinary differential equations of higher orders:** Linear Differential Equations of Higher order with constant coefficients, Second order linear differential equations with variable coefficients: Homogenous and Exact forms, one part of CF is known, Change of dependent and independent variables, method of variation of parameters.	10

IV	**Partial Differential Equations – First order:** Order and Degree, Formation; Linear Partial differential equations of First order, Lagrange's Form, Non-Linear Partial Differential equations of first order, Charpit's method, Standard forms.	**6**
V	**Partial Differential Equations – Higher order:** Classification of Second order partial differential equations, Separation of variables method to simple problems in Cartesian coordinates including two dimensional Laplace, one dimensional Heat and one-dimensional Wave equations.	**6**

	Text Books
1	Meher R., Vallabhbhai S. (2022), India Textbook on Ordinary Differential Equations A Theoretical Approach (1st Ed.), River Publishers Series
2	Vineyngar K. , Prasad M. V. S. S. N., Ranganatham, S. , & ,Gandhi, B. K. (2023), Engineering Mathematics-II (Ordinary Differential Equations and Vector Calculus), S Chand Publishing
3	Uma K. P., &, S. Padma (2023), Mathematics II : Transforms and Differential Equations. S Chand Publishing
4	Malik A. K., Mathur P. and Purohit S. D. (2019), A Textbook of Engineering Mathematics-II, Manakin Press
5	Dass, H. K. (2016). Advanced engineering mathematics (21st Ed.). S Chand Publishing

	Reference Books
1	M.D. Rai Singhania (2024). Engineering Mathematics, (20th Ed.), S. Chand Publishing
2	Ross, S. L. (2010). Differential Equations (3rd Ed.). John Willey & Sons.
3	Chasnov, J. R. (2019). Differential Equations for Engineers (1st Ed.). The Hong Kong University of Science and Technology.
4	Xie, W.-C. (2013). Differential equations for engineers (1st Ed.). Cambridge University Press.

	Useful Links
1	https://tutorial.math.lamar.edu/classes/de/la_matrix.aspx
2	https://onlinecourses.nptel.ac.in/noc20_ma37/preview

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	-	-	-	-	-	-	-	-	2
CO2	2	2	2	2	-	-	-	-	-	-	-	2
CO3	2	3	2	3	-	-	-	-	-	-	-	2
CO4	1	2	2	3	-	-	-	-	-	-	-	2
CO5	3	3	2	3	-	-	-	-	-	-	-	2

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

PSOs	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	1	2	-	1	2	-	1	2	-		2	-	1	2	-		2	-	1	2	-
CO2	1	2	-		2	-	1	2	-	1	2	-		2	-	1	2	-	1	2	-
CO3	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-
CO4		2	-	1	2	-	1	2	-	1	2	-	1	2	-	1	2	-	1	2	-
CO5	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-	-	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B.Tech.				
Class, Semester	I Year, II Sem				
Course Code	252HS1-05				
Course Name	**Human Values and Ethics**				
Desired Requisites:	Foundation Knowledge about Morale values and Ethics				
Teaching Scheme		**Examination Scheme (Marks)**				
Lecture	2 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	16	16	8	60	100
Interaction	24	**Credits: 2**				
Course Objectives					
1	To examine and use fundamental human values and skills, including self-exploration, to grasp how they affect well-being and success.				
2	To show they understand professional ethics and how human values naturally fit into various situations.				
3	To connect how practicing human values and skills leads to lasting happiness.				
4	To incorporate human values into their lives to create balanced personal and social interactions.				
5	To practice and assess the importance of trust, mutual satisfaction, and co-existence in building strong relationships.				
Course Outcomes (CO) with Bloom's Taxonomy Level					
CO1	Recognize the co-relationship between "Values"; and "skills" to ensure persistent happiness and prosperity.	Remember			
CO2	Understand the co-existence of Human Being - Harmony in 'Body' and 'I'.	Understand			
CO3	Applying harmonious values in family, society and environment for universal order.	Apply			
CO4	Analyze the holistic perception of harmony at all levels of existence.	Analyze			
CO5	Creating a prototype of harmony in professional and personal lives by understanding and evaluating co-existence of human being with all four orders of nature.	Evaluate			
Chapter	**Course Contents**	**Hours**			
I	Difference between Ethics, Human values and Moral Values. Understanding the need, basic guidelines, Self-Exploration - its content and process; 'Natural Acceptance' and Experiential Validation, Continuous Happiness and Prosperity- Human Aspirations, Right understanding, Relationship and Physical Facilities,	6			
II	Understanding human being as a co-Existence of the sentient 'I' and the material 'Body' Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha, Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs and Physical Facilities,	6			
III	Understanding harmony in the Family, understanding values in human-human relationship; meaning of Nyaya and program for its fulfilment to ensure Ubhay-tripti; Trust (Vishwas) and Respect (Samman), meaning of Vishwas; Difference between intention and competence, meaning of Samman. Difference between respect and differentiation; the other salient values in relationship, harmony in the society, Samadhan, Samridhi, Abhay, Sah-astitva as comprehensive Human Goals, Visualizing a universal harmonious order in society- Undivided Society (AkhandSamaj), Universal Order (Sarvabhaum Vyawastha)- from family to world family. Case studies on Family Relationship and Ubhay Tripti	4			
IV	Understanding the harmony in the Nature. Interconnectedness and mutual fulfilment among the four orders of nature- recyclability and self-regulation in nature. Understanding Existence as Co-Existence (Sah-astitva) of mutually interacting units in all pervasive Space. Holistic perception of harmony at all levels of Existence. Engineers' role in Sustain development. Project on Recycle Product	4			

V	Define Universal Order. Competence in Professional Ethics: a) Ability to utilize the professional competence for augmenting universal human order, b) Ability to identify the scope and Characteristics of people-friendly and eco-friendly production systems, technologies and management models. Case studies related to values in professional life and individual life.	4

Text Books

1	Human Values and Ethics by Prof. Bhushan Manchanda, S. Chand Publishing, Kindle Edition, 2025.
2	A Textbook on Professional Ethics and Human Values by R. S. Naagarazan, New Age International Publishers, 3rd Edition, 2022.

References

1	Engineering Ethics Including Human Values. M. Govingrajran, S. Natrajan VS Senthil Kumar, 2004, Kindle Edition
2	Human Values and Professional Ethics – Jayshree Suresh, B.S. Raghavan, S. Chand Publishing, 2003, Fourth Edition

Useful Links

1	https://fdp-si.aicte-india.org/index.php
2	https://uhv.org.in/
3	https://www.skillindiadigital.gov.in/courses/detail/d7db86f0-d2d8-42aa-a8c0-502467563b5a

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	2	-	-	-	-
CO2	-	-	-	-	-	-	-	2	-	-	-	-
CO3	-	-	-	-	-	-	-	2	-	-	-	-
CO4	-	-	-	-	-	-	-	2	-	-	-	-
CO5	-	-	-	-		-	-	2	-	-	-	

The strength of mapping is to be written as1,2,3; Where 1: Low,2: Medium,3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO2	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO3	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO4	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO5	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1

The strength of mapping is to be written as1,2,3; Where 1: Low,2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute

Department of Applied Sciences					
AY 2025-26					
Course Information					
Program	B.Tech.				
Class, Semester	I Year, II Sem				
Course Code	252CS3-07				
Course Name	**Object Oriented Programming**				
Desired Requisites:	Basics of Programming				
Teaching Scheme		**Examination Scheme (Marks)**				
Lecture	3 Hrs/week	**MTE1**	**MTE2**	**MTE3**	**ETE**	**Total**
Tutorial	-	16	16	8	60	100
Interaction	36	**Credits: 3**				

Course Objectives	
1	**To introduce** the principles and features of different programming paradigms, emphasizing Object-Oriented Programming (OOP) concepts like classes, objects, data abstraction, and encapsulation.
2	**To develop** the ability to implement advanced C++ features such as dynamic memory management, function overloading, constructors, destructors, and friend functions for efficient programming.
3	**To familiarize** students with the concepts of inheritance, multiple inheritance, polymorphism, and abstract classes to enable the design of reusable and scalable software systems.
4	**To enable** students to apply operator overloading, static members, dynamic binding, and virtual functions for building flexible and extensible programs.
5	**To train** students in efficient programming practices by introducing classes, objects, inheritance and polymorphism techniques for real-world application development.

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Define the core principles of object-oriented programming and apply them to real-world problem-solving using C++.	Remember
CO2	Describe fundamental programming constructs including data types, operators, control statements, and loops to build logic- driven programs.	Understand
CO3	Implement C++ programs using class-based structures, encapsulation, constructors, destructors, and object interactions.	Apply
CO4	Differentiate advanced object-oriented features such as inheritance, polymorphism, operator overloading, and dynamic binding.	Analyze
CO5	Develop robust modular, reusable, and maintainable code with principles of object-oriented programming for extensible software development.	Create

Chapter	**Course Contents**	**Hours**
I	Fundamentals of Object-Oriented Programming (OOP), Comparison between Procedural and Object-Oriented Programming, Key Characteristics of OOP, Real-World Examples of OOP Applications, Data Type, Variables, Constants, Input & Output operation using iostream header file. **Operators** - Arithmetic operators**:** Perform basic mathematical operations like addition, subtraction, multiplication, division, modulus, exponentiation, and floor division. **Relational operators**: Compare values and return Boolean results like greater than less than, equal to, or not equal. **Logical operators:** Combine multiple conditions using logical connector. **Assignment operators:** Assign values to variables. **Bitwise operators:** Perform operations at the binary level data types, variables, input output statements.	7

II	**Control statements:** If else statements: Control the program flow based on conditions. Nested conditions: Allow the inclusion of if statement inside another if to test complex logic. **Looping-** For loop: Used to iterate over sequences like ranges, lists, or strings, executing a block of code for each element. While loop: Executes a block of code as long as the condition is true, often used when the number of iterations is unknown. Do-while loop: Similar to a while, but guarantees at least one iteration. Design Pattern & Series Programming using Loops.	8
III	**Core Concepts of C++ Classes**: Class and Object Concepts, Data member, member function, structures in C++, different access specifiers, defining member function inside and outside class, constructors and destructors, friend function and classes, using this pointer.	7
IV	**Inheritance:** Types of inheritance, multiple inheritance, virtual base class, Function overriding, abstract class.	6
V	**Polymorphism:** Constant data member and member function, static data member and member function, polymorphism, operator overloading, dynamic binding, virtual function and pure virtual function.	8

Text Books	
1	Object Oriented Prog in C++, Saurav Sahay, 2nd Edition, Oxford University Press, 2012.
2	Object-Oriented Programming in C++: E. Balaguruswamy, 8th Edition, McGraw Hill, 2020.
3	Let us C++ by Yashwant Kanetkar, 17th Edition, 20th Edition, BPB Publications, 2024.

References	
1	C++: The Complete Reference, Herbert Schildt, 4th Edition, McGraw-Hill Education, 2015.
2	Object Oriented Programming (Simplified Approach Using C++), A. A. Puntambekar, Technical Publications, 4th Edition, 2020.

Useful Links	
1	https://www.learn-cpp.org
2	https://cplusplus.com/doc/tutorial/program_structure

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	-	1	-	-	-	-	-	-	2
CO2	3	2	3	-	2	-	-	-	-	-	-	-
CO3	3	3	3	-	2	-	-	-	-	-	-	-
CO4	3	3	3	2	2	-	-	-	-	-	-	-
CO5	3	2	3	2	3	-	-	-	-	-	-	2

The strength of mapping is to be written as 1,2,3; Where 1: Low, 2: Medium, 3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	1	2	-	1	2	-	1	2	-	1	2	-	1	-	-	1	2	-	1	2
CO2	2	2	-	2	2	-	2	2	-	2	2	-	2	-	-	-	1	-	-	1	-
CO3	-	1	2	-	1	2	-	-	2	-	-	2	-	-	-	-	-	2	-	-	2
CO4	-	1	-	-	1	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-
CO5	1	1	2	1	1	2	1	1	2	1	1	2	1	1	-	-	1	2	-	1	2

The strength of mapping is to be written as 1,2,3; Where 1: Low, 2: Medium, 3: High

Assessment (for Theory Course)

The internal assessment of 40 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 16, 16, and 8 marks, respectively. End Term Examination (ETE) is of 60 marks, which will also factor into the overall evaluation.

Department of Applied Sciences

AY 2025-26

Course Information	
Program	B.Tech.
Class, Semester	I Year, II Sem
Course Code	252CS3-25
Course Name	**Object Oriented Programming Lab**
Desired Requisites:	Basic Course of Software

Teaching Scheme		Examination Scheme (Marks)				
Practical	2 Hrs/week	MTE1	MTE2	MTE3	ETE	Total
Tutorial	-	24	24	12	40	100
Total Hours	24	Credits: 1				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Define basic C++ Program using i/o variables and structures.	Remember
CO2	Explain the classes for code reuse.	Understand
CO3	Apply object-oriented programming concepts using class and objects	Apply
CO4	Illustrate the concepts of inheritance and polymorphism for reusable code and dynamic behaviour.	Apply
CO5	Analyze the generic classes concepts in programming problem.	Analyze

Chapter	Course Contents
I	Understand the basics of C++ library, variables, and data input-output.
II	Implement class and object concepts and function overloading.
III	Write programs to understand dynamic memory allocation and array of objects.
IV	Program to understand different types of constructors and destructor.
V	Implement friend function to access private data of a class and usage of this Pointer.
VI	Write programs to understand the usage of constant data member and member function, static data member and member function in a class.
VII	Write programs to understand the difference between public, private, and protected access specifiers which members are accessible in the derived classes and which are not.
VIII	Write programs to implement different types of inheritance.
IX	Write programs to understand constructor and destructor calling order in inheritance.
X	Write programs to implement function overloading and function overriding.
XI	Write programs to implement Operator overloading concepts.

Reference & Text Books	
1	Object-Oriented Programming with C++ E. Balagurusamy (McGraw Hill Education).
2	Object Oriented Prog in C++, Saurav Sahay, 2nd Edition, Oxford University Press, 2012.
3	Let us C++ by Yashwant Kanetkar, 20th Edition, BPB Publications, 2024.
4	C++: The Complete Reference, Herbert Schildt,4th Edition, McGraw-Hill Education, 2015.

CO-PO Mapping for All B.Tech. Programs												
Program Outcomes (PO)												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	2	-	-	-	-	-	-	-	2
CO2	3	2	2	3	-	-	-	-	-	-	3	-
CO3	3	2	1	-	-	-	-	-	2	-	-	1
CO4	-	3	1	3	-	-	-	-	3	-	2	-
CO5	3	2	2	1	-	-	-	-	-	-	2	-
The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High												

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
Program Specific Outcomes (PSOs)																					
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	1	-	-	3	-	-	1	-	-	1	-	-	2	-	-	1	-	-	2	-
CO2	-	3	-	-	2	-	-	3	-	-	3	-	-	1	-	-	2	-	-	2	-
CO3	-	2	-	-	2	-	-	2	-	-	1	-	-	2	-	-	1	-	-	2	-
CO4	-	1	-	-	2	-	-	1	-	-	3	-	-	3	-	-	2	-	-	2	-
CO5	-	3	-	-	1	-	-	2	-	-	3	-	-	1	-	-	1	-	-	2	-

The strength of mapping is to be written as 1,2,3; Where 1: Low,2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute.

Department of Applied Sciences	
AY 2025-26	
Course Information	
Program	B.Tech.
Class, Semester	I Year, II Sem
Course Code	252ME3-31
Course Name	**Computer Aided Machine Drawing**
Desired Requisites:	Foundational knowledge about the concepts of Designing.

Teaching Scheme		Examination Scheme (Marks)				
		MTE1	MTE2	MTE3	ETE	Total
Practical	2Hrs/week	24	24	12	40	100
Tutorial	-					
Total Hours	24	Credits: 1				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Recall and understand the conventional representation of machine components and material, types of Lines & dimensioning.	Understand
CO2	Explain concept of first and third angle projections and prepare drawing of simple machine elements, sectional views for various parts and assembly	Apply
CO3	Draw and explain various types of temporary and permanent fasteners	Apply
CO4	Draw freehand sketches of lines, materials and various components i.e. bearings, couplings, Welded joints, pipe joints, valves etc.	Analyze
CO5	Explain various commands and create drawing in AutoCAD.	Create

Chapter	Course Contents
I	**Overview of Computer Graphics :** Covering theory of CAD software [such as: The menu System, Toolbars (standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Crosshairs, Coordinate System), Dialog boxes and windows, Shortcut menus (Button Bars), Command Line (where applicable), The Status Bar, Different methods of zoom as used in CAD, Select and erase objects.: Isometric Views of lines, Planes, Simple and compound Solids. (**Two drawing using AutoCAD**)
II	**Introduction:** Principles of drawing, conventional representation of machine components and materials, lines, types of lines, dimensioning types, rules of dimensioning. **Conversion of pictorial views into orthographic views:** Introduction to orthographic projection, concept of first angle and third angle projection, drawing of simple machine elements in first angle projection, missing view problems covering Principles of Orthographic Projections. (**one drawing using AutoCAD**).
III	**Sectional views of mechanical components:** Introduction, cutting plane line, type of sectional views-full section, half section, partial or broken section, revolved section, removed section, offset section, sectioning conventions-spokes, web rib, shaft, pipes, different types of holes, conventions of section lines for different metals and materials. (**one drawing using AutoCAD**)
IV	**Fasteners and other mechanical components:** Temporary and permanent fasteners, thread nomenclature and forms, thread series, designation, representation of threads, bolted joints, screws **(Free hand sketch)** Riveted joints, rivets and riveting, type of rivets, types of riveted joints etc. Coupling: Protected type, flange, and pin type flexible coupling. (**two drawing using AutoCAD**)
V	**Nut & Bolts:** Types of Bolts, Nuts, Hexagonal Nut and bolt, foundation bolts etc. (**one free hand sketch and one drawing using AutoCAD**)

Reference & Text Books	
1	Engineering Drawing, N. D. Bhatt, Charotar Publishing House
2	A Text book of Machine Drawing, Laxmi Narayan & Mathur, Jain Brothers

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

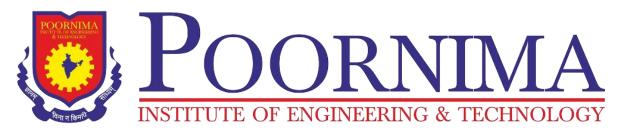|	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	-	-	3	2	-	-	3	2	-	
CO2	2	-		-		2	-	-	-	-	-	
CO3	3	2		2		-	-	-	-	-	-	-
CO4	3	2		2		-	-	-	-	-	-	-
CO5	2	-		-	3	-	-	-	-	-	-	2

The strength of mapping is to be written as 1, 2, 3; Where 1: Low,2: Medium,3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	2	-	-	-	2	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-
CO2	-	2	-	-	-	2	-	-	2	-	-	2	-	2	-	-	-	2	-	1	-
CO3	-	3	-	-	-	3	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-
CO4	-	2	-	-	-	2	-	-	2	-	-	2	-	2	-	-	-	2	-	1	-
CO5	-	2	-	-	-	2	-	-	2	-	-	1	-	2	-	-	-	2	-	2	-

The strength of mapping is to be written as 1, 2, 3; Where 1: Low,2: Medium, 3: High

Assessment (for Lab Course)

The internal assessment of 60 marks consists of three parts: MTE1, MTE2, and MTE3 carrying 24, 24, and 12 marks, respectively. End Term Examination (ETE) is of 40 marks, which will also factor into the overall evaluation as per academic manual and examination policy of the institute

Department of Applied Sciences		
AY 2025-26		
Course Information		
Program	B.Tech.	
Class, Semester	I Year, II Sem	
Course Code	252FC8-0X	
Course Name	**NSS**	
Desired Requisites:	Foundational knowledge about Social Service	

Teaching Scheme		Examination Scheme (Marks)					
Practical	1 Hr/week	MTE1	MTE2	MTE3	ETE		Total
Tutorial	-	-	-	-	-		100
Total Hours	12	Credits: 0.5					

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Remember the purpose, objectives, and structure of the National Service Scheme	Remember
CO2	Understand the importance of cleanliness, hygiene, and environmental sustainability.	Understand
CO3	Apply NSS principles to engage in activities that promote health, safety, and awareness.	Apply
CO4	Analyze social issues through participation in community-based programs and outreach visits.	Analyze
CO5	Evaluate the impact of NSS activities on personal, institutional, and societal development.	Evaluate

S. No.	Name of Activity
I	**Student Induction Program and NSS Vision:** Introduction to NSS, its objectives, motto, symbol, and activities undertaken.
II	**Visit to Adopted Village:** Student get familiar with the ongoing community problems of the village and help in finding solution.
III	**Volunteerism**: Need and objective of Shramdan to mention the cleanliness in any park or public place
IV	**Blood Donation Awareness Program:** Need and importance of Blood Donation, drive to motivate people on Blood Donation by participation in such activities.
V	**Awareness on Skill Development:** Session on Skill Development for Youth**.**
VI	**Awareness on Health and Life Style**: Awareness by Posters on HIV and Healthy life Style through drives by student.
VII	**Stress Management:** Conduct a workshop/ session/ talk on Stress Management among Youth.
VIII	**Social connect and responsibilities**: Helping local schools to achieve good results and enhance their enrolment in Higher/ technical/ vocational education & Adoption of plants
IX	**Reflection on NSS Activities:** Reflection and take away on previous labs.
X	**Documentation on NSS Activities:** Preparation of reports

Reference & Text Books	
1	National Service Scheme Manual - Govt. of India, Ministry of Youth Affairs & Sports, Revised edition 2006
2	Youth and Social Service - R.C. Das, Discovery Publishing House, First Edition 2012
3	Community Organization and Development - R. S Dwivedi, Macmillan India, First edition 1995
4	Social Work and Community - S.K. Bhatia, Deep and Deep Publication, First Edition 2005

CO-PO Mapping for All B.Tech. Programs												
Program Outcomes (PO)												
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	2	-	-	-	-
CO2	-	-	-	-	-	-	-	2	-	-	-	-
CO3	-	-	-	-	-	-	-	2	-	-	-	-
CO4	-	-	-	-	-	-	-	2	-	-	-	-
CO5	-	-	-	-	-	-	-	2	-	-	-	-
The strength of mapping is to be written as 1, 2, 3; Where 1: Low, 2: Medium, 3: High												

Program Specific Outcomes (PSOs)																				
Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO2	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO3	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO4	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO5	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
The strength of mapping is to be written as 1, 2, 3; Where 1: Low,2: Medium, 3: High																				

Foundation course assessment will be a part of the Academic Manual and Examination Policy of the institute.

Department of Applied Sciences		
AY 2025-26		
Course Information		
Program	B. Tech.	
Class, Semester	I Year, II Sem	
Course Code	252FC8-0X	
Course Name	**Sports and Yoga**	
Desired Requisites:	Foundational knowledge about Sports and Yoga	

Teaching Scheme		Examination Scheme (Marks)				
Practical	1 Hr/week	MTE1	MTE2	MTE3	ETE	Total
Tutorial	-	-	-	-	-	100
Total Hours	12	Credits: 0.5				

Course Outcomes (CO) with Bloom's Taxonomy Level		
CO1	Remember the well-being of the body and self	Remember
CO2	Make the students understand the importance of sound health and fitness principles as they relate to better health.	Understand
CO3	Expose the students to a variety of physical and yogic activities aimed at stimulating their continued inquiry about Yoga, physical education, health, and fitness	Apply
CO4	Exhibit sportsmanship, motivation, and teamwork through participation in physical fitness and sports activities	Analyze
CO5	To develop among students an appreciation of physical activity as a lifetime pursuit and a means to better health	Evaluate

Chapter	Course Contents
I	**Importance of Yoga** Definition of Asana, Kinds of Asana, Physical and mental benefits of Asana. Practice any two asanas; Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana
II	**Yoga & Lifestyle:** Definition of Pranayam, Kinds of Pranayam, Physical and Mental Benefits of Pranayam, definition of Dhyana. Practice Dhyana
III	**Asanas -: Fitness, Wellness and Nutrition:** Asanas with Therapeutic Value (Any two asanas): Ardhmatsyendrasana, Usthrasana, Mayurasana, Shirshasana, Vajrasana. Engage in at least one wellness Program and write a report on it.
IV	**Nutrition and Athlete's Care Food and Nutrition:** Importance of balanced diet for sports persons. Diet for Power Sports, Short and long duration sports. Make a Chart of healthy diet followed by the student. Result Analysis of the Diet Plan.
V	**Outdoor Sports:** Participation in Outdoor Sport activities at different level.
VI	**Session on Sports and fitness**: Session / Talk / Presentation on Sports and Fitness
VII	**Sports Administration & Management (Any Two):** Demonstration of Supervision activities in Sports Management. Demonstration of skills of Management. Demonstration of fixtures of various kinds in sports competitions. Demonstration of technical and non-technical purchase procedure
VIII	**Sports for All** Revive forgotten Indian Games and relearn them by performing like – Gilli Danda, Satolia, Case Study on Gramin Olympic of Rajasthan
IX	**Careers in Physical Education** (iii) Organize an event / internal / tournament in your college. Prepare a News Report of an observed Sports competition. (iv) Create a presentation on any topic from Physical Education using an audio-visual aid. Demonstrate Warming-up / Conditioning / Cooling-down exercises.
X	**Documentation:** Presentation of Activities completed during the session

	Reference & Text Books																			
1	Yoga: The Spirit and Practice of Moving into Stillness - Erich Schiffmann, Gallery Books; Original ed. edition, Simon & Schuster Netherlands. First Edition 1996																			
2	Concepts of Physical Fitness: Active Lifestyle for Wellness - Corbin, C. B., G. J. Welk, W. R Corbin, K. A. Welk, McGraw Hill, 17 Edition 2013.																			
3	Sports Facility Management - Ammon, R., Southall, R.M. and Blair, D.A, Fitness Information Technology Publistshers, 2 Illustrated Edition, 2004.																			

CO-PO Mapping for All B.Tech. Programs

Program Outcomes (PO)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	-	-	-	-	-	-	-	2	-	-	-	1
CO2	-	-	-	-	-	-	-	2	-	-	-	1
CO3	-	-	-	-	-	-	-	2	-	-	-	1
CO4	-	-	-	-	-	-	-	2	-	-	-	1
CO5	-	-	-	-	-	-	-	2	-	-	-	1

The strength of mapping is to be written as1,2,3; Where 1: Low,2: Medium,3: High

Program Specific Outcomes (PSOs)

Program	CS/CSR			AI & DS			CS AI			CS DS			IOT			EC			EE		
PSOs	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3	PSO1	PSO2	PSO3
CO1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO2	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO3	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO4	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1
CO5	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1	-	-	1

The strength of mapping is to be written as1,2,3; Where1: Low, 2: Medium, 3: High

Foundation course assessment will be done as per Academic Manual and Examination Policy of the institute.