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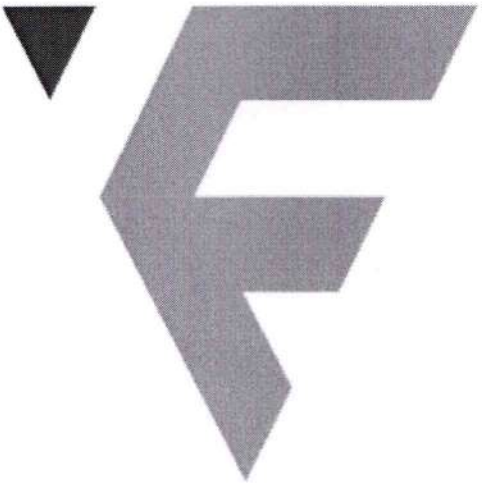
FABTECH TECHNICAL CAMPUS COLLEGE OF ENGINEERING & RESEARCH, SANGOLA

(An Autonomous Institute)

Affiliated to Dr. Babasaheb Ambedkar Technological University (BATU), Lonere



In line with the

National Education Policy (NEP) 2020 Compliant

Curriculum

For

UNDER-GRADUATE PROGRAMME

First Year B. Tech. (Sem.-I & II)

(w.e.f. A.Y. 2025-26)

FABTECH EDUCATION SOCIETY'S
FABTECH TECHNICAL CAMPUS COLLEGE OF ENGINEERING &RESEARCH
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Curriculum for First Year B.Tech. with effect from A.Y. 2025-26

Semester I

Scheme-B (CSE and AI&DS)

Course Type	*Course Code*	*Name of the Course*	*Engagement Hours*			*Credits*	**In Semester Evaluation Scheme**		**End Semester Evaluation Scheme**		*Total Marks*
			L	*T*	*P*		**MSE**	**ICA**	**ESE**	**OE/POE**	
							M	**M**	**M**	**M**	
BSC	25UGS11003	Solid State Physics	3	-	-	3	30	10	60	-	100
	25UGS11004	Engineering Mathematics-I	3	1	-	4	30	10	60	-	100
ESC	25UCS11001	Computer Programming and Problem Solving	3	-	-	3	30	10	60	-	100
	25UCS11002	Computer Programming and Problem Solving Lab	-	-	2	1	-	25	-	25	50
	25UAI11001	Introduction to AI	2	-	-	2	30	10	60	-	100
	25UET11001	Basic Electrical and Electronics Engineering	2		-	2	30	10	60	-	100
	25UET11002	Basic Electrical and Electronics Engineering Lab	-		2	1	-	50	-	-	50
VSEC	25UGS11102	Computer Tools & Applications Lab	-	-	4	2	-	50	-	-	50
IKS	25UGS11201	IKS-Vedic Mathematics	2	-	-	2	-	50	-	-	50
CC	25UGS11302	Yoga/Sports	-	-	4	2	-	50	-	-	50
		Total	**15**	**1**	***12***	**22**	**150**	**275**	**300**	**25**	**750**
			Abbreviations: **L**=Lecture, **T**=Tutorial, **P**=Practical, **M**=Marks								

*Students must complete a student induction program at the start of the first semester to ease their transition into the academic environment.

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Curriculum for First Year B.Tech. with effect from A.Y. 2025-26

Semester II

Scheme-B (CSE and AI&DS)

Course Type	*Course Code*	*Name of the Course*	*Engagement Hours*			*Credits*	**In Semester Evaluation Scheme**		**End Semester Evaluation Scheme**		*Total Marks*
			L	*T*	*P*		**MSE**	**ICA**	**ESE**	**OE/POE**	
							M	**M**	**M**	**M**	
BSC	25UGS11001	Applied Physics	3	-	-	3	30	10	60	-	100
	25UGS11002	Applied Physics Lab	-	-	2	1	-	25	-	-	25
	25UGS12007	Engineering Mathematics-II	3	1	-	4	30	10	60	-	100
ESC	25UCS12003	Data Structure	2	-	-	2	30	10	60	-	100
	25UCS12004	Data Structure Lab	-	-	2	1	-	50	-	25	75
	25UET12006	Digital Techniques	3	-	-	3	30	10	60	-	100
PCC	25UCS12101	Object Oriented Programming	1		-	1	-	25	-	-	25
	25UCS12102	Object Oriented Programming Lab	-		2	1	-	25	-	50	75
VSEC	25UGS12103	Scripting Languages Lab	-	-	4	2	-	50	-	-	50
AEC	25UGS11401	Communication Skills	1	-	-	1	-	25	-	-	25
	25UGS11402	Communication Skills Lab	-	-	2	1	-	25	-	-	25
CC	25UGS11301	NSS	-	-	4	2	-	50	-	-	50
		Total	**12**	**1**	**18**	**22**	**120**	**315**	**240**	**75**	**750**
			Abbreviations: L=Lecture, **T**=Tutorial, **P**=Practical, **M**=Marks								

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□ **Instructions:**

- Students of respective branches will undergo Scheme A (For Civil &Mech), Scheme B (for AIDS & CSE) and Scheme C (for Electrical & E&TC)

➢ **Guidelines for the Student Induction Program:**

- New entrants in an engineering program come with different backgrounds, perspectives, and experiences- social, economic, regional, and cultural. It is essential to help them transition smoothly into this new environment and instill in them the institution's ethics, along with a broader sense of purpose.
- To facilitate this transition, an ***Induction Program*** for newly admitted undergraduate students will be conducted at the beginning of the first semester.
- The Induction Program aims to:
  - Help students acclimate to their new surroundings.
  - Foster openness and interpersonal connections.
  - Establish a healthy daily routine.
  - Build peer-to-peer and faculty-student relationships.
  - Enhance self-awareness and sensitivity toward others, society, and nature.
- The program includes the following activities that promote personal growth, social awareness, and academic readiness and to help them integrate into their new environment
  - Physical activities for well-being.
  - Creative arts for expression.
  - Literary activities for intellectual development.
  - Universal human values to encourage ethical awareness and social responsibility
  - Proficiency modules to strengthen foundational academic skills.
  - Lectures by experts and eminent persons for valuable insights.
  - Visits to local establishments such as hospitals and social NGOs to connect with the community.
  - Familiarization with the institute and various departments
- While the Induction Program does not carry any marks or credits, student participation will be assessed at the institute level based on the following mandatory criteria:
  - Attendance
  - Active Participation

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➢ **Course Nomenclature Format:**

Courses are assigned unique 10-character codes following the structure below:

- **First two numeric characters** – Indicate the academic inception year of curriculum implementation, e.g., 25 for 2025.
- **Next one characters** – Represent the education level, e.g. U- for Undergraduate and P- for Postgraduate
- **Following two characters** – Discipline code, e.g., GS- for General Science Engineering, AI- Artificial Intelligence and Data Science, CE- Civil Engineering, CS- Computer Science and Engineering, EE- Electrical Engineering, ET- Electronics and Telecommunications Engineering, ME- Mechanical Engineering.
- **One numeric character** – Years of study within a degree or program, e.g., 1 for F.Y. B. Tech, 2 for S.Y. B. Tech. 3 for T.Y. B. Tech and 4 for Final Year
- **One numeric character** – Semester numbers range from 1 to 2.
- **Next three numeric characters** – Department-assigned course number, e.g. 001 to 999 under different course categories

➢ **Course Type Descriptions:**

Type of Course	Description	Course Code	Responsible Department
BSC	Basic Science Course	001-100	General Science Department (FE)
VSEC	Vocational and Skill Enhancement Course	101-200	
IKS	Indian Knowledge System	201-300	
CC	Co-curricular Courses	301-400	
AEC	Ability Enhancement Course	401-500	
ESC	Engineering Science Course	001-100	Respective Departments
PCC	Program Core Course	101-200	
PCE	Program Core Elective	201-300	
HON	Honors	301-400	
MDM	Multidisciplinary Minor	401-500	
OE	Open Electives	501-600	

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➢ **Courses and Credits offered in Semesters I & II as per NEP-2020:**

Course Type	Course Code	Name of the Course	Credits	Actual Total Credits Utilized in Sem. I & II	Total Credits Range Required as per NEP-2020 in Sem. I & II
BSC	25UGS11001	Applied Physics	3	15	14-18
	25UGS11002	Applied Physics Lab	1		
	25UGS11003	Solid State Physics	3		
	25UGS11004	Engineering Mathematics-I	4		
	25UGS12007	Engineering Mathematics-II	4		
ESC	25UCS11001	Computer Programming and Problem Solving	3	15	12-16
	25UCS11002	Computer Programming and Problem Solving Lab	1		
	25UCS12003	Data Structure	2		
	25UCS12004	Data Structure Lab	1		
	25UAI11001	Introduction to AI	2		
	25UET11001	Basic Electrical and Electronics Engineering	2		
	25UET11002	Basic Electrical and Electronics Engineering	1		
	25UET12005	Digital Techniques	3		
PCC	25UCS12101	Object Oriented Programming	1	2	2
	25UCS12102	Object Oriented Programming Lab	1		
VSEC	25UGS11102	Computer Tools& Applications	2	4	4
	25UGS12103	Scripting Languages Lab	2		
AEC	25UGS12401	Communication Skill	1	2	2
	25UGS12402	Communication Skill Lab	1		
IKS	25UGS11201	IKS-Vedic Mathematics	2	2	2
CC	25UGS11302	Yoga/Sports/Cultural	2	4	4
	25UGS11301	NSS	2		
		Total Credits	**44**	**44**	**40-48**

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First Year B. Tech.

Semester-I (w.e.f. A.Y. 2025-26)

Solid State Physics (25UGS11003)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	3	3	**MSE:**	30 Marks
Tutorials:	-	-	**ICA:**	10 Marks
Practical:	-	-	**ESE:**	60 Marks
Total:	3	3	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Explain the basic concepts of crystal structure and X-ray diffraction	
CO 2	Describe the working principle of a laser, the process of recording and reconstructing a hologram and its applications	
CO 3	Summarize the band theory of solids and the conductivity of semiconducting materials.	
CO 4	Explain the principle and structure of optical fibres and understand the different types of dielectric polarization	
CO 5	Describe the concept of superconductivity and classify magnetic materials	

Unit	***Course Contents***	***No. of lectures (hrs.)***
Unit 1	**Crystallography and X-ray Diffraction** Crystal Structure: unit cell- primitive and non- primitive, lattice parameters, seven crystal systems, properties of unit cell: number of atoms per unit cell, coordination number, atomic radius, packing density, Relation between lattice constant and density, Miller indices, X-rays: X-ray diffraction, line and continuous Spectrum of X-ray, Bragg's law for X-ray diffraction.	8
Unit 2	**Photonics and Holography** Laser: interaction of energy and matter: stimulated absorption, spontaneous emission and stimulated emission of radiation, population inversion, pumping, characteristics of laser, types of laser – Ruby and He-Ne laser, applications of laser. holography: comparison between holography and photography, principle of holography, recording of hologram, reconstruction of image, applications of holography.	8

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Unit 3	**Semiconductor** Introduction, band theory of solids, classification of solids, conductivity of intrinsic and extrinsic semiconductors, Hall effect, derivation of Hall voltage and Hall coefficient, numericals.	8
Unit 4	**Optical Fibre and Dielectrics** Fibre optics: principle and structure of optical fibre, acceptance angle, acceptance cone, numerical aperture, advantages of optical fibre, applications of optical fibre, numericals, dielectrics: difference between polar and non-polar dielectrics, polarization, types of dielectric polarization: ionic, electronic, orientation and space charge.	8
Unit 5	**Physics of Advanced Materials** Superconducting materials: superconductivity, type-i and type-ii superconductors, Meissner effect, properties of superconductor, applications of superconductor, magnetic materials: types of magnetic materials: diamagnetic, paramagnetic and ferromagnetic, B-H curve.	7
Text Books:		
1)	Engineering Physics - R.K. Gaur and S. L. Gupta. DhanpatRai Publications Pvt. Ltd.- New Delhi.	
2)	Fundamental of Physics - Halliday and Resnik. Willey Eastern Limited.	
Reference Books:		
1)	Solid State Physics – O. S. Pillai. New Age International Limited.	
2)	Solid State Physics – A.J. Dekker. McMillan India –Limited.	
3)	Solid State Physics – B. L. Theraja. S. Chand Publication.	
4)	Introduction to Solid State Physics – Charles Kittel. John Wiley and Sons.	
5)	Optics –AjoyGhatak. MacGraw-Hill Education (India) Pvt. Ltd.	
6)	Engineering Physics – M.N. Avadhanulu and P.G. Kshirsagar.S.Chand and Company LTD.	

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First Year B. Tech.

Semester-I (w.e.f. A.Y. 2025-26)

Engineering Mathematics-I (25UGS11004)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	3	3	**MSE:**	30 Marks
Tutorials:	1	1	**ICA:**	10 Marks
Practical:	-	-	**ESE:**	60 Marks
Total:	4	4	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Illustrate the applications of De Moivre's theorem, and establish relationships between circular and hyperbolic functions.	
CO 2	Demonstrate the concept of partial derivatives and their applications in engineering.	
CO 3	Compute Jacobians, errors, approximations, and maxima and minima of functions using partial derivatives.	
CO 4	Solve first-order differential equations with applications to various engineering problems.	
CO 5	Apply vector differentiation techniques to analyze the physical and geometrical properties of vectors.	

Unit	***Course Contents***	***No. of lectures (hrs.)***
Unit 1	**Complex Numbers,** Review of complex numbers, De Moivre's theorem, applications of De Moivre's theorem: roots of complex numbers, circular functions of a complex variable and hyperbolic functions, relation between circular and hyperbolic functions, separation of real and imaginary parts, logarithm of complex numbers.	8
Unit 2	**Partial Differentiation** Partial derivatives of first and higher orders, variable to be treated as constant, total derivative, change of variables, partial differentiation of composite functions, Homogeneous functions – Euler's theorem and their deductions for functions containing two variables (without proof), applications to various engineering problems.	7
Unit 3	**Applications of Partial Differentiation** Jacobians, properties of Jacobian: JJ'=1, errors and approximations, maxima and minima of functions of two variables, Lagrange's method of undetermined multipliers with single constraint.	7

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Unit 4	**Ordinary Differential Equations and Their Applications** Order and degree of ordinary differential equations, ordinary differential equations of first order and first degree: Exact differential equations and Equations reducible to exact differential equations, linear differential equations, reducible to linear differential equations, Applications to orthogonal trajectories, Newton's law of cooling, Electrical and Electronics engineering applications.	9
Unit 5	**Vector Differentiation** Velocity vector, acceleration vector, tangential and normal component of acceleration, vector differential operator, gradient, directional derivatives, angle between surfaces, divergence and curl, solenoidal and irrotational field.	8

Text Books:	
1)	Higher Engineering Mathematics (42nd Edition), B. S. Grewal, Khanna Publications, Delhi.
2)	Advanced Engineering Mathematics, E. Kreyzig's, John Wiley & Sons, INC.
Reference Books:	
1)	Higher Engineering Mathematics by B. V. Ramana, Tata McGraw-Hill Publications, New Delhi
2)	A Text Book of Engineering Mathematics by Peter O" Neil, Thomson Asia Pte Ltd., Singapore.
3)	Advanced Engineering Mathematics by C. R. Wylie & L. C. Barrett, Tata Mcgraw- Hill Publishing Company Ltd., New Delhi.
4)	Engineering Mathematics, Srimanta Pal and Subodh C. Bhunia, Oxford University Press India.
5)	Mathematics for Engineering Applications, Kuldip S. Rattan and Naathan W. Klingbeil Wiley. (Modeling and Core Engineering Application).
6)	Engineering Mathematics Through Applications, Kuldeep Singh, PalgraveMacmilan.
7)	Advanced Engineering Mathematics, H. K. Dass, S. Chand Publications, Delhi.
8)	A Textbook of Engineering Mathematics, N. P. Bali and Manish Goyal, Laxmi Publications, 2008
9)	A Textbook of Applied Mathematics, P. N. and J. N. Wartikar, Vol.1, Pune VidyarthiGrihaPrakashan.
10)	A Course in Engineering Mathematics (Vol I) by Dr. B. B. Singh, Synergy Knowledgeware, Mumbai.
Sr. No.	**Name of Tutorial / Assignment**
1)	Solve numericals to find roots of algebraic equations.
2)	Solve numericals to find logarithms of complex numbers.
3)	Solve numericals on partial differentiation of composite functions.
4)	Solve numericals on Euler's theorem on homogeneous functions.
5)	Solve numericals on errors and approximations.
6)	Solve numericals to find maxima and minima of functions of two variables.
7)	Solve numericals of reducible exact and reducible to linear differential equations
8)	Solve numerical problems of orthogonal trajectories and Newton's law of cooling.
9)	Solve numerical problems of electrical and electronics engineering applications.
10)	Solve numericals to find directional derivatives of vectors
11)	Solve numericals to check whether a given function is irrotational or not, if irrotational then find its scalar potential.

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	First Year B. Tech.
	Semester-I(w.e.f. A.Y. 2025-26)
	Computer Programming and Problem Solving (25UCS11001)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	3	3	**MSE:**	30 Marks
Tutorials:	-	-	**ICA:**	10 Marks
Practical:	2	1	**ESE:**	60 Marks
Total:	5	4	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Understand the fundamental concepts of the C language to construct basic programs.	
CO 2	Apply control structures, such as conditional statements and loops, to develop logic-driven solutions to problems.	
CO 3	Demonstrate effective use of arrays, strings, and pointers, including dynamic memory allocation, to solve data processing.	
CO 4	Illustrate problem-solving strategies and algorithm design techniques.	
CO 5	Use the C language to solve real-world problems and applications.	

Unit	***Course Contents***	***No. of lectures (hrs.)***
Unit 1	**Basics of C Programming** Introduction to Programming Languages, Structure of a C Program, Data Types and Variables, Constants, Identifiers, Operators and Expressions, Input and Output Functions, Algorithms, Flowcharts.	8
Unit 2	**Control Structures** Conditional Statements, if, if-else, nested if, switch-case, Loops and Iteration-for, while, do-while loops, Nested loops, Break, continue, goto statements.	7
Unit 3	**Arrays and Strings, Pointers & Dynamic Memory** One-dimensional and Two-dimensional Arrays, Array Initialization and Memory Representation, String Handling: Input/output, string functions (strlen, strcpy, strcmp, etc.), Basics of functions, types of functions, Pointer basics, pointer arithmetic.	9

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Unit 4	**Introduction to Problem Solving** Definition of a problem and solution, Steps in problem solving, Problem-solving strategies (Trial and Error, Divide and Conquer, Greedy Approach, etc.), Top-down vs Bottom-up design.	8
Unit 5	**Application DevelopmentProject** Build a small-scale application using C, such as: Student management system, a bank record system, an inventory or billing system, a quiz game. Focus on modular code.	7

Text Books:	
1)	Computer Fundamentals and Programming in C" by E. Balagurusamy.
2)	Programming and Problem Solving with C" by Ashok N. Kamthane and Amit Kamthane.
Reference Books:	
1)	Let Us C by Yashavant Kanetkar.
2)	Programming in ANSI C by E. Balagurusamy.
3)	How to Solve It by Computer by R.G. Dromey.
4)	The C Programming Language by Brian W. Kernighan and Dennis M. Ritchie.
5)	Computer Programming and Problem Solving by A.N. Kamthane and Amit Ashok Kamthane.

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First Year B. Tech.

Semester-I (w.e.f. A.Y. 2025-26)

Computer Programming and Problem Solving Lab (25UCS11002)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	-	-	**MSE:**	-
Tutorials:	-	-	**ICA:**	25 Marks
Practical:	2	1	**ESE:**	-
Total:	2	1	**OE/POE:**	25 Marks

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Apply control structures and data types in C programming.	
CO 2	Solve problems using algorithms and data structures.	
CO 3	Demonstrate use of arrays, strings, and dynamic memory allocation to solve data processing tasks.	
CO 4	Apply C programming concepts to solve real-world problems and applications.	

Ex.	***Experiment Details***	***No. of Ex. Sessions (hrs.)***
Ex. 1	Write an algorithm for the area of a rectangle and the area of a circle.	2
Ex. 2	Write a program in C that calculates the sum of the first N natural numbers (1, 2, 3, ..., N), where N is a positive integer entered by the user.	2
Ex. 3	Write a program in C that checks whether a given integer is **even** or **odd** using an if-else control structure.	2
Ex. 4	Write a program in C that checks if a given string is a **palindrome.**	2
Ex. 5	Write a program in C that reverses a given integer using a while loop.	2
Ex. 6	Write a program in C that reverses the elements of a given array.	2
Ex. 7	Write a program in C that calculates the length of a string **without using the** strlen() **function** by iterating through the string.	2
Ex. 8	Write a C program to implement **Binary Search** using the divide and conquer technique.	2

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Ex. 9	Write a C program to sort an array using the **Merge Sort** algorithm (Divide and Conquer).	2
Ex. 10	Write a program for 5 students having data members roll no, name.	4
Text Books:		
1)	Computer Fundamentals and Programming in C" by E. Balagurusamy.	
2)	Programming and Problem Solving with C" by Ashok N. Kamthane and AmitKamthane.	
Reference Books:		
1)	Let Us C by Yashavant Kanetkar.	
2)	Programming in ANSI C by E. Balagurusamy.	
3)	How to Solve It by Computer by R.G. Dromey.	
4)	The C Programming Language by Brian W. Kernighan and Dennis M. Ritchie.	
5)	Computer Programming and Problem Solving by A.N. Kamthane and Amit Ashok Kamthane.	

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First Year B. Tech.

Semester-I (w.e.f. A.Y. 2025-26)

Introduction to AI (25UAI11001)

Teaching Scheme:			Evaluation Scheme:	
	No. of Hrs./week	No. of Credits		
Lectures:	2	2	MSE:	30 Marks
Tutorials:	-	-	ICA:	10 Marks
Practical:	-	-	ESE:	60 Marks
Total:	2	2	OE/POE:	-

	Course Outcomes: At the end of this course, students shall be able to	
CO 1	Understand fundamental concepts, history and applications of AI.	
CO 2	Explain various AI techniques, such as problem-solving and searching.	
CO 3	Apply AI strategies to solve simple real-world problems.	
CO 4	Understand and analyze knowledge representation and reasoning approaches.	
CO 5	Describe emerging trends and societal impacts of AI.	

Unit	*Course Contents*	*No. of lectures (hrs.)*
Unit 1	**Introduction to Artificial Intelligence** Definition and characteristics of AI, History and evolution of AI, Applications of AI in various domains, Foundations of AI, Difference between AI, ML, and Deep Learning.	6
Unit 2	**Problem Solving and Search Techniques** Problem formulation, State space representation, Uninformed search strategies: BFS, DFS, Informed search: Greedy and A* Algorithm.	6
Unit 3	**Knowledge Representation and Reasoning** Introduction to knowledge representation, Propositional and Predicate Logic, Semantic networks and frames, Rule-based systems, Introduction to reasoning and inference.	5
Unit 4	**Learning and Decision Making** Basics of machine learning, Supervised vs. Unsupervised learning, Introduction to decision trees and neural networks, AI in decision support systems, Introduction to agents and environments.	4

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Unit 5	**AI Ethics and Future Trends** AI in society: opportunities and challenges, Ethical considerations in AI, AI bias and fairness 4. Explainable AI, Current trends: ChatGPT, Robotics, Autonomous Systems, AI in India.	5
Text Books:		
1)	Elaine Rich, Kevin Knight, Shivashankar B. Nair, "Artificial Intelligence", McGraw-Hill Education	
2)	Stuart Russell and Peter Norvig, Artificial Intelligence – A Modern Approach, Pearson.	
Reference Books:		
1)	Deepak Khemani, "A First Course in Artificial Intelligence," McGraw-Hill Education.	
2)	Nils J. Nilsson, Artificial Intelligence: A New Synthesis, Morgan Kaufmann.	
3)	RajendraAkerkar, "Artificial Intelligence", PHI Learning.	

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	First Year B. Tech.
	Semester-I (w.e.f. A.Y. 2025-26)
	Basic Electrical and Electronics Engineering(25UET11001)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	2	2	**MSE:**	30 Marks
Tutorials:	-	-	**ICA:**	10 Marks
Practical:	-	-	**ESE:**	60 Marks
Total:	2	2	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Apply the fundamental laws and theorems of electrical circuits to analyze simple DC and AC circuits.	
CO 2	Interpret the construction and working of different electrical systems.	
CO 3	Describe the fundamentals of magnetic circuits and single-phase transformers.	
CO 4	Explain the working principles and applications of semiconductor diodes.	
CO 5	Use types of transistors in electronics circuits.	

Unit	***Course Contents***	***No. of lectures (hrs.)***
Unit 1	**Basics of Electrical Circuits:** DC circuits: Electrical elements: Resistor, Inductor, Capacitor, conductor, Ohm's Law, Kirchhoff's Laws (Simple Problems), Star-delta transformation, AC circuits: AC fundamentals: waveforms, RMS value, average values, form factor, peak factor, steady state analysis of R-L-C series A.C. circuits, active, reactive, apparent power, power triangle and power factor, Simple examples.	6
Unit 2	**Electrical Machines:** Difference between Generator & motors, DC Generators: Working principle, types, DC Motors: Working principle, types, characteristics, Back emf and Torque Equation, Introduction of Induction Machines, Construction and working principle of three-phase induction motor.	6

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Unit 3	**Electromagnetism and Single-Phase Transformer** Basic definitions related to magnetic circuits, Faraday's law of electromagnetic induction and Lenz's law, working principle and construction of a single-phase transformer, EMF equation of a single-phase Transformer.	5
Unit 4	**Diode & Applications:** P-N junction diode: Construction, Symbol, working principle, V-I characteristics, Zener diode: Zener diode as voltage regulator, Rectifier-Half wave, Full wave (bridge rectifier and center tapped), circuit operation, Comparison.	4
Unit 5	**Transistors** Transistors: BJT-PNP, NPN, Transistor configurations: CB, CE, CC, Introduction to FET, MOSFET, CMOS.	5
Text Books:		
1)	Kothari DP and I.J Nagrath, —Basic Electrical and Electronics Engineering, Second Edition, McGraw Hill Education, 2020.	
2)	Boylstad, Electronics Devices and Circuits Theory, Pearson Education	
Reference Books:		
1)	MillmanHalkias: Electronic Devices and Circuits, McGraw-Hill Publication, 2000.	
2)	Donald Neaman, Electronic Circuit Analysis and Design, McGraw-Hill Publication, 3rd Edition.	
3)	B. L. Theraja, Electrical Technology – Volume - I, S. Chand.	
4)	V. N. Mittal and Arvind Mittal, Basic Electrical Engineering, McGraw-Hill Publication.	
5)	D C Kulshreshtha, —Basic Electrical Engineering‖, Tata McGraw Hill, 2010.	
6)	B. L. Theraja, Fundamentals of Electrical Engineering and Electronics, S. Chand, 2006.	
7)	B. L. Theraja, Electrical Technology – Volume - IV, S. Chand.	

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First Year B. Tech.

Semester-I (w.e.f. A.Y. 2025-26)

Basic Electrical and Electronics Engineering Lab (25UET11002)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	-	-	**MSE:**	-
Tutorials:	-	-	**ICA:**	50 Marks
Practical:	2	1	**ESE:**	-
Total:	2	1	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Use a multimeter to test and analyze basic electrical and electronic components.	
CO 2	Apply the fundamental circuit laws and theorems, including KCL, KVL, and Thevenin's theorem, for analysis of electrical circuits.	
CO 3	Examine the series RLC response of AC circuits.	
CO 4	Determine the characteristics ofthe PN junction diode and Zener diode in rectification and voltage regulation.	
CO 5	Demonstrate the working of BJTs as amplifiers and study the basics of electrical machines.	

Ex.	***Experiment Details***	***No. of Ex. Sessions (hrs.)***
Ex. 1	Using a multimeter to measure and test different electrical and electronic components.	2
Ex. 2	To validate Thevenin's theorem.	2
Ex. 3	To Verify KCL and KVL.	2
Ex. 4	Examine the Series RLC circuit.	2
Ex. 5	Utilizing PN junction diodes to investigate full-wave rectifiers.	2
Ex. 6	Analysis of the PN junction diode's V-I characteristics.	2
Ex. 7	Investigation of Zener Diode as a Voltage Regulator.	2
Ex. 8	Examining BJT as an amplifier.	2

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Ex. 9	Study of the input-output characteristics of BJT.	2
Ex. 10	Learning the Basics of Electrical Machines.	2
Text Books:		
1)	Kothari DP and I.J Nagrath, —Basic Electrical and Electronics Engineering, Second Edition, McGraw Hill Education, 2020	
2)	Boylstad, Electronics Devices and Circuits Theory, Pearson Education	
Reference Books:		
1)	MillmanHalkias: Electronic Devices and Circuits, McGraw-Hill Publication, 2000.	
2)	Donald Neaman, Electronic Circuit Analysis and Design, McGraw-Hill Publication, 3rd Edition	
3)	B. L. Theraja, Electrical Technology – Volume - I, S. Chand.	
4)	V. N. Mittal and Arvind Mittal, Basic Electrical Engineering, McGraw-Hill Publication.	
5)	D C Kulshreshtha, —Basic Electrical Engineering‖, Tata McGraw Hill, 2010	
6)	B. L. Theraja, Fundamentals of Electrical Engineering and Electronics, S. Chand, 2006	
7)	B. L. Theraja, Electrical Technology – Volume - IV, S. Chand.	

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First Year B. Tech.

Semester-I (w.e.f. A.Y. 2025-26)

Computer Tools & Applications (25UGS11102)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	-	-	**MSE:**	-
Tutorials:			**ICA:**	50 Marks
Practical:	4	2	**ESE:**	-
Total:	4	2	**OE/POE:**	

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Demonstrate a clear understanding of basic computer concepts and effectively operate operating system environments (Windows/Linux) for daily office tasks.	
CO 2	Illustrate word format, and manage professional documents using word processing tools like MS Word or Google Docs, including mail merge and print setup.	
CO 3	Use spreadsheet software to organize, analyze, and present data using formulas, functions, charts, and formatting techniques.	
CO 4	Design engaging presentations and communicate effectively using email, internet tools, and virtual meeting platforms.	
CO 5	Operate common office equipment, manage digital files securely, use cloud storage, and apply basic cybersecurity practices to protect data.	

Ex.	***Experiment Details***	***No. of Ex. Sessions (hrs.)***
Ex. 1	Create a formatted document with headings, bullet lists, page setup, header/footer, and page numbers.	2
Ex. 2	Perform a Mail Merge to generate multiple invitation letters or certificates using a contact list.	2
Ex. 3	Insert tables, images, symbols, and use spelling/grammar tools in a professional document.	2
Ex. 4	Enter data in a spreadsheet and apply basic formatting and functions like SUM, AVERAGE, and IF.	2
Ex. 5	Create charts (bar, pie, line) from data and apply sorting, filtering, and conditional formatting.	2

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Ex. 6	Demonstrate use of cell referencing (relative/absolute), data validation, and password protection in sheets.	2
Ex. 7	Design a PowerPoint presentation with text, images, transitions, animations, and audio/video using the Canva tool.	2
Ex. 8	Use Gmail to compose and send an email with CC/BCC, attach files, and organize emails into folders/labels.	2
Ex. 9	Demonstrate use of cloud storage (Google Drive/One Drive) – upload, organize, share, and download files.	2
Ex. 10	Practice basic cybersecurity: set strong passwords, identify phishing emails, and explore antivirus/firewall tools.	2
Ex. 11	Create a virtual meeting for effective communication using Zoom or Google Meet platform.	2
Ex.12	Case Study: How to use AI tools and common software like Word, Excel, PowerPoint, Gmail, and cloud storage to create documents, manage data, design presentations, send emails, and ensure cybersecurity.	2

Note:
1. For the 12th practical, assign a list of case studies based on all 11 previous practicals. Each group of 4 students should select one case study, create a detailed report in a Word file, upload the file to Google Drive, and share the link via email.

Text Books:

1)	A Textbook of Computer Applications" by P. K. Sinha & Priti Sinha

Text Books:

1)	"Fundamentals of Computers" by V. Rajaraman
2)	"Computer Applications" by Niranjan Shrivastava
3)	Computer Applications in Business" by R. Parameswaran

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First Year B. Tech.

Semester-I (w.e.f. A.Y. 2025-26)

IKS-Vedic Mathematics (25UGS11201)

Teaching Scheme:			Evaluation Scheme:	
	No. of Hrs./week	No. of Credits		
Lectures:	2	2	MSE:	
Tutorials:	-	-	ICA:	50 Marks
Practical:	-	-	ESE:	-
Total:	2	2	OE/POE:	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Explain the concept of IKS and the overview of Vedic Mathematics.	
CO 2	Solve problems on vinculum numbers, beejank methods, and straight division using Paravartya and Dhwajank.	
CO 3	Demonstrate Dwandvayoga, Vilokanam, and traditional methods for square roots, cube roots, and extended operations.	
CO 4	Predict recurring decimal patterns and verify divisibility using osculators like Ekadhikena and Ekanyunena.	
CO 5	Determine the advantages of simultaneous operations in mixed arithmetic calculations.	

Unit	*Course Contents*	*No. of lectures (hrs.)*
Unit 1	**Indian Knowledge System and Vedic Mathematics** IKS Foundational concepts and characteristics of Indian philosophical and scientific traditions; Significance of Ancient Knowledge, Overview of Indian mathematics, works by Indian Mathematicians, Vedic Mathematics, aims and objectives of Vedic Mathematics, Sutras and Up-sutras of Vedic Mathematics,	5
Unit 2	**Fundamental Operations in Arithmetic** Vinculum Numbers and their Applications in Tables, Addition, Multiplication and Division, Multiplication, by Nikhilam, Ekadhikena, Ekanyunena&Urdhvatiryagbhyam, Beejank and their Applications in Addition, Subtraction, Multiplication, Square and Division, Straight Division by Nikhilam, Paravartya&Dhwajank	6
Unit 3	**Extended Operations** Square and Square root by Dwandvayoga, Addition and Difference of Square, Square root by Vilokanam&Dwandva yoga, Cube and Cube root, MeruPrastar in Higher Powers.	5

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Unit 4	**Osculators** Recurring Decimals by Ekadhikena and Ekanyunena, Divisibility Test and Quotient by Ekadhikena and Ekanyunena	5
Unit 5	**Mixed Operations** Mixed Operations of Addition, Subtraction, Multiplication and Square by Simultaneous Operations.	5
Text Books:		
1)	Introduction to Indian Knowledge System: Concepts and Applications, Mahadevan B., BhatVinayakRajat, NagendraPavana R.N. (2022), PHI Learning Private Ltd., Delhi.	
2)	Vedic Mathematics, S.B. K. Tirthaji, Agrawala (editor), Motilal Banarsidas, New Delhi	
Reference Books:		
1)	Vedic Ganit Nirdeshika Bhag-2, Vidya Bharti Akhil Bhartiya Shiksha Sansthan Kurushetra.	
2)	Vedic Ganit Vihangam Drishti 1, Shiksha Sanskriti Uthhan Nyas, Delhi.	
3)	Lilavati of Bhaskracarya: A Treatise of Mathematics of Vedic Tradition.	
4)	History of Science in India Volume-1, Part-I, Part-II, Volume VIII, SibajiRaha, et al. National Academy of Sciences, India and The Ramkrishan Mission Institute of Culture, Kolkata (2014).	
5)	Indian Knowledge Systems Vol – I & II, Kapoor Kapil, Singh, Avadhesh (2021), Indian Institute of Advanced Study, Shimla, H. P.	
6)	Mathematics in Ancient and Medieval India, Bag, A. K. (1979). ChaukhambaOrientalia, New Delhi.	
7)	Textbook on The Knowledge System of Bhārata, Bhag Chand Chauhan, Garuda Prakashan.	

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	First Year B. Tech.
	Semester-I (w.e.f. A.Y. 2025-26)
	Yoga/Sports (25UGS11302)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	-	-	**MSE:**	-
Tutorials:	-	-	**ICA:**	50 Marks
Practical:	4	2	**ESE:**	-
Total:	4	2	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Demonstrate the forms of yoga.	
CO 2	Demonstrate the practices of pranayama.	
CO 3	Apply the fundamental ideas and methods of physical education.	
CO 4	Apply knowledge of sports for physical and mental wellness.	
CO 5	Illustrate the use of yoga, pranayama, and sports activities to promote physical fitness and mental well-being.	

Ex.	***Experiment Details***	***No. of Ex. Sessions (hrs.)***
Ex. 1	**Yoga** History and philosophy of yoga, different styles of yoga (Hatha, Vinyasa, Ashtanga, Basic yoga postures (asanas) and their benefits, Principles of alignment and balance, Shitalikarna, Vyayama, Suryanamaskara.	12
Ex. 2	**Pranayama and Breath Control** Pranayama, importance of pranayama, types of pranayama (e.g., AnulomVilom, Kapalabhati, Bhramari), and benefits of breath control for physical and mental health.	12
Ex. 3	**Physical Education** Meaning, Definition and Importance of Physical Education, Aim and Objective, Conditioning exercises, warming up and cooling down.	8
Ex. 4	**Fundamentals of Sports for Wellness** Types of sports and their health benefits, Indoor and outdoor sports. Basic principles of physical fitness and conditioning, developing a personalized fitness plan, safety measures	12

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	and injury prevention.	
Ex. 5	**Sports, Yoga, and Pranayama** Synergistic benefits of combining sports, yoga, and pranayama, pranayama to enhance sports performance and recovery.	12
Text Books:		
1)	Fundamentals of Track and Field, P. N. Dharma, KhelSahitya Kendra, New Delhi.	
2)	Asanas- Swami Kuvalyananda Pioneer in Scientific Yoga, Swami Kuvalayananda, Kaivalyadhama SamitiLonavla.	
Reference Books:		
1)	History of Indian Theatre, ManoharLaxmanVaradpande (1987).	
2)	Indian Music (The Magic of the Raga), Raghava R. Menon	
3)	Modern Music: A Concise History (World of Art S.).	
4)	Modern Trends and Physical Education, A. Singh.	
5)	OP: Asana, Why and How, Tiwari.	
6)	Light on Yoga, B. K. S. Iyengar.	
7)	Indian Art and Culture, NitinSinghania, McGraw Hill Edge	

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First Year B. Tech.

Semester-II (w.e.f. A.Y. 2025-26)

Applied Physics (25UGS11001)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	3	3	**MSE:**	30 Marks
Tutorials:	-	-	**ICA:**	10 Marks
Practical:	-	-	**ESE:**	60 Marks
Total:	3	3	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Apply the concept of acoustics and calculate absorption coefficients and reverberation time.	
CO 2	Describe the production of ultrasonic waves and identify various types of defects in materials.	
CO 3	Use interference, diffraction and polarisation phenomenon to design optical instruments.	
CO 4	Describe the concepts of nuclear physics and Quantum Mechanics.	
CO 5	Explain nanomaterials, their production techniques and synthesis method	

Unit	***Course Contents***	***No. of lectures (hrs.)***
Unit 1	**Acoustics** Acoustics: Introduction, Architectural acoustics, Reverberation time, Sabine's formula, Absorption coefficient, Factors affecting on architectural acoustics of building, Acoustic planning of building (remedies) and numericals.	7
Unit 2	**Ultrasonics** Ultrasonics: Ultrasonic waves, Production of ultrasonics (Piezoelectric effect, Magnetostriction effect) and its applications and numericals. Non-Destructive Testing (NDT): Types of defect, Method of NDT, Visual Inspection, Liquid/Dye penetrant testing.	8
Unit 3	**Wave Optics** Interference : Interference in thin film due to reflected light, Wedge shaped film, Newton's Rings, Polarization of light: Methods for production of polarized light (Reflection, Refraction & Double refraction), Specific rotation and optical activity,	9

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	Diffraction of light: Definition and difference between diffraction and interference. Introduction of diffraction grating, Resolving power of diffraction grating.	
Unit 4	**Nuclear Physics & Quantum Mechanics** Nuclear Physics: Mass Defect, Nuclear reaction, Q values of nuclear reaction, GM Counter, Quantum Mechanics: de Broglie's Concept of matter wave, Heisenberg"s uncertainty principle, Schrodinger's time dependent and time independent wave equations, Introduction to quantum computing (bits & qubits, difference between classical and quantum computers).	8
Unit 5	**Nano Technology** Nano-materials: Nanomaterial, Production techniques (Top down and bottom up), Carbon, Nano Tubes (CNTs), Ball milling and spay pyrolysis methods for synthesis of nano particles.	7
Text Books:		
1)	Engineering Physics - R.K. Gaur and S. L. Gupta. DhanpatRai Publications Pvt. Ltd.- New Delhi.	
2)	Fundamental of Physics - Halliday and Resnik. Willey Eastern Limited.	
3)	Applied Physics – I:- R. J. Gawade, G. M. Kharmate, Dr. A. Chakrabarti Synergy Knowledgewarepublication	
Reference Books:		
1)	Engineering Physics – M.N.Avadhanulu and P.G. Kshirsagar, S.Chand and Company LTD.	
2)	Nanotechnology: An Introduction To Synthesis, Properties And Applications of Nanomaterials – Thomas Varghese, K. M. Balakrishna	
3)	Optics –AjoyGhatak. MacGraw Hill Education (India) Pvt. Ltd	
4)	"Concepts of Modern Physics" by Arthur Beiser	
5)	"Introduction to Quantum Mechanics" by David J. Griffith	

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First Year B. Tech.

Semester-II (w.e.f. A.Y. 2025-26)

Applied Physics Lab (25UGS11002)

Teaching Scheme:			Evaluation Scheme:	
	No. of Hrs./week	**No. of Credits**		
Lectures:	-	-	**MSE:**	-
Tutorials:	-	-	**ICA:**	25 Marks
Practical:	2	1	**ESE:**	-
Total:	2	1	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Determine the velocity of ultrasonic waves in liquids and thickness of thin wire by using wedge shaped thin film.	
CO 2	Determine the radius of curvature of a plano-convex lens by analyzing the fringe pattern formed by Newton's rings.	
CO 3	Measure the specific rotation of optically active substances using a half-shade polarimeter and understand the principles of optical activity and study crystal Plane	
CO 4	Calculate wavelength of a laser source using diffraction principles	
CO 5	Demonstrate the synthesis, characterization and analysis of nanomaterials	

Ex.	***Experiment Details***	***No. of Ex. Sessions (hrs.)***
Ex. 1	Determination of velocity of ultrasonic wave in given liquid using ultrasonic interferometer	2
Ex. 2	Measurement of absorption coefficient of given sound absorbing materials	2
Ex. 3	Determination of wavelength of monochromatic light by using Newton's rings	2
Ex. 4	Measurement of radius of curvature of Plano convex lens by using Newton's rings	2
Ex. 5	Determination of wavelength of He-Ne laser using diffraction grating	2
Ex. 6	Determination of the thickness of a thin film by measurement by wedge shaped air film	2
Ex. 7	Determination of the resolving power of a plane diffraction grating using a spectrometer.	2
Ex. 8	Determination of specific rotation of optically active material	2
Ex. 9	Demonstrate the scales of nanotechnology	2
Ex. 10	Demonstration of Geiger-Muller tube	2

Text Books:

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1)	Engineering Physics - R.K. Gaur and S. L. Gupta. Dhanpat Rai Publications Pvt. Ltd.- New Delhi.
2)	Fundamental of Physics - Halliday and Resnik. Willey Eastern Limited.
Reference Books:	
1)	Engineering Physics – M.N. Avadhanulu and P.G. Kshirsagar.S.Chand and Company LTD.
2)	Nanotechnology: An Introduction To Synthesis, Properties And Applications of Nanomaterials– Thomas Varghese, K. M. Balakrishna
3)	Optics –AjoyGhatak. MacGraw Hill Education (India) Pvt. Ltd
4)	"Concepts of Modern Physics" by Arthur Beiser
5)	"Introduction to Quantum Mechanics" by David J. Griffith

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Semester-II (w.e.f. A.Y. 2025-26)

Engineering Mathematics-II (25UGS12007)

Teaching Scheme:			Evaluation Scheme:	
	No. of Hrs./week	No. of Credits		
Lectures:	3	3	MSE:	30 Marks
Tutorials:	1	1	ICA:	10 Marks
Practical:	-	-	ESE:	60 Marks
Total:	4	4	OE/POE:	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Use matrix algebra to solve systems of linear equations in engineering problems.	
CO 2	Apply matrix methods to find eigenvalues, eigenvectors, and use the Cayley-Hamilton theorem with applications.	
CO 3	Demonstrate curve tracing in various coordinate systems.	
CO 4	Apply multiple integrals to determine the area and mass of a lamina.	
CO 5	Apply statistical tools like correlation, regression, and curve fitting for effective engineering data analysis.	

Unit	*Course Contents*	*No. of lectures (hrs.)*
Unit 1	**Matrices** Rank of a matrix, normal form of a matrix, consistency of systems of linear equations, system of homogeneous equations and non – homogeneous equations, linear dependence and independence of vectors, applications to diverse engineering problems: Electrical and Electronics engineering applications, balancing the chemical reactions.	8
Unit 2	**Eigen Values and Eigen Vectors** Eigen values, eigen vectors, properties of eigen values and eigen vectors, Cayley-Hamilton Theorem (without Proof), applications of Cayley-Hamilton theorem, applications to various engineering problems: stability in control systems.	8
Unit 3	**Tracing of Curves.** Definition and significance of curve tracing, Classification of curves: Cartesian, polar, parametric, etc., tracing of cartesian curves, tracing of parametric curves, tracing of polar curves: cardioid and rose curve only.	8

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Unit 4	**Multiple Integration** Double integration, evaluation over the given region, change of order of integration, change to polar coordinates, triple integration, application of double integral to compute area, mass of lamina.	8
Unit 5	**Statistics** Correlation: Karl Pearson's coefficient of correlation, regression, fitting of curve: fitting of straight line, parabola and related curves, applications to various engineering problems.	7

Text Books:	
1)	Higher Engineering Mathematics (42nd Edition), B. S. Grewal, Khanna Publications, Delhi.
2)	Advanced Engineering Mathematics, E. Kreyzig's, John Wiley & Sons, INC.
Reference Books:	
1)	Higher Engineering Mathematics by B. V. Ramana, Tata McGraw-Hill Publications, New Delhi
2)	A Text Book of Engineering Mathematics by Peter O" Neil, Thomson Asia Pte Ltd., Singapore.
3)	Advanced Engineering Mathematics by C. R. Wylie & L. C. Barrett, Tata Mcgraw- Hill Publishing Company Ltd., New Delhi.
4)	Engineering Mathematics, Srimanta Pal and Subodh C. Bhunia, Oxford University Press India.
5)	Mathematics for Engineering Applications, Kuldip S. Rattan and Naathan W. Klingbeil, Wiley. (Modeling and Core Engineering Application).
6)	Engineering Mathematics Through Applications, Kuldeep Singh, PalgraveMacmilan.
7)	Fundamentals of Statistics, S. C. Gupta, Himalaya House Publication.
8)	Advanced Engineering Mathematics, H. K. Dass, S. Chand Publications, Delhi.
9)	A Textbook of Applied Mathematics, P. N. and J. N. Wartikar, Vol.1, Pune VidyarthiGrihaPrakashan.
10)	A Course in Engineering Mathematics (Vol I) by Dr. B. B. Singh, Synergy Knowledgeware, Mumbai.
Sr. No.	**Name of Tutorial / Assignment**
1)	Solve numericals on the rank of a matrix using the normal form.
2)	Solve numericals on a system of simultaneous linear equations by the matrix method.
3)	Solve numericals to find eigen values and eigen vectors of the matrix.
4)	Solve numericals on the Cayley-Hamilton theorem.
5)	Solve numericals on tracing of parametric curves.
6)	Solve numericals on tracing of polar curves.
7)	Solve numericals of changing the order of integration.
8)	Solve numericals to find the area and mass of a lamina by using double integration.
9)	Solve numericals on correlation and regression.
10)	Solve numericals on the fitting of curves.

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Semester-II (w.e.f. A.Y. 2025-26)

Data Structure (25UCS12003)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	2	2	**MSE:**	30 Marks
Tutorials:	-	-	**ICA:**	10 Marks
Practical:	-	-	**ESE:**	60 Marks
Total:	2	2	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		***BL Level***
CO 1	Apply the appropriate data structure and algorithm to solve given problem and compare sorting and searching algorithms with respect to space and time complexity.	
CO 2	Construct computer science applications using dynamic memory allocation techniques for efficient data storage and management.	
CO 3	Build computer science applications by implementing stacks and queues for efficient data handling and processing.	
CO 4	Demonstrate the use of tree data structures for representing and manipulating hierarchically organized data in various applications.	
CO 5	Utilize graph data structure to design social media, network based and circuit application.	

Unit	***Course Contents***	***No. of lectures (hrs.)***
Unit 1	**Introduction to Data structure:** Concept and Need of Data Structure, Classification of Data Structures, Complexity of Algorithms, Abstract Data Types, Arrays, Representation of Arrays in Memory, Operations on Array, Implementation of Arrays, Strings and its Representation in Memory, String, Operations on Strings.Sorting: Bubble Sort, Selection Sort, and Insertion Sort.Searching: Linear Searching, Binary Searching.	7
Unit 2	**Linked Lists:** Dynamic memory allocation, Singly Linked Lists, Doubly linked Lists, Circular linked lists and Generalized linked lists, Applications of Linked list, introduction to Vectors and Application.	5
Unit 3	**Stack & Queue:** Stack representation and Implementation using arrays and Linked lists. Applications of	5

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	stack in Recursion, Expression conversions and evaluations. Queues: Representation and implementation using array and Linked lists, Types of queue. Applications of Queues: Job Scheduling, Josephus problem etc.	
Unit 4	**Trees:** Basic terminology, representation using array and linked lists. Binary Search trees (BST), Tree Traversals: Recursive and Non-recursive, Operations on binary tree. Threaded Binary Tree, Heap Tree and Heap Sort, Huffman Tree.	5
Unit 5	**Graph:** Terminology and representation using Adjacency Matrix and Adjacency Lists, Graph Traversals and Application: BFS and DFS, connected graph, Bipartite Graph, Detecting Cycle in graph. Minimum Spanning tree: Prims and Kruskal 's Algorithm, Shortest Path Algorithms, Hashing techniques, Hash table, Hash functions.	4

Text Books:	
1)	E. Horwitz , S. Sahani, Anderson-Freed, — Fundamentals of Data Structures in C‖, Second Edition, Universities Press.
2)	Y. Langsam, M.J. Augenstein, A.M.Tenenbaum, —Data structures using C and C++‖, Pearson Education, Second Edition.
Reference Books:	
1)	Data Structures using C++ by Y. Langsam, M. Augenstein, A. Tenenbaum
2)	NarasimhaKarumanchi, —Data Structures and Algorithm Made Easy‖, Fifth Edition, CareerMonk publication
3)	J. Tremblay, P. Soresan, —An Introduction to data Structures with applications‖, TMHPublication, 2nd Edition.
Sr. No.	**Name of Tutorial / Assignment**
1)	Define data structure. Why do we need data structures in programming?
2)	Differentiate between linear and non-linear data structures.
3)	Explain Abstract Data Type (ADT) with an example.
4)	What is algorithm complexity? Explain Big-O notation with one example.
5)	Write an algorithm for following sorting techniques with dry run on an array a. Bubble Sort b. Insertion Sort c. Selection Sort
6)	Create and display a Singly Linked List
7)	Write an algorithm for Insert and delete nodes in a Doubly Linked List.
8)	Write an algorithm for Circular Linked List traversal
9)	Write an algorithm for Graph traversal: algorithms: Depth First Search and Breadth First Search.
10)	Write an algorithm for Prim 's ,Kruskal's , Dijkstra 's and Hashing Algorithm

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Semester-II (w.e.f. A.Y. 2025-26)

Data Structure Lab (25UCS12004)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	-	-	**MSE:**	-
Tutorials:			**ICA:**	50 Marks
Practical:	2	1	**ESE:**	-
Total:	2	1	**OE/POE:**	25 Marks

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Perform basic operations on Arrays, Apply different Searching and Sorting methods.	
CO 2	Develop and manipulate linear data structures such as linked lists, stacks, and queues to solve real-world problems	
CO 3	Construct and perform operations on non-linear data structures such as binary trees, binary search trees, and threaded binary trees.	
CO 4	Apply traversal algorithms such as DFS and BFS to explore graphs and solve problems related to graph theory.	
CO 5	Implement and evaluate advanced algorithms such as Prim's, Kruskal's, Dijkstra's	

Ex.	***Experiment Details***	***No. of Ex. Sessions (hrs.)***
Ex. 1	i) Write a 'C' program to perform following Operations on Array: Create, Insert, Delete, Display ii) Write a 'C' Program to Search a particular data from the given Array of numbers using: Linear Search Method iii) Write a 'C' program to Search a particular data from the given Array of numbers using Binary Search Method iv) Write a 'C' Program to Sort an Array of numbers using Bubble Sort Method, Selection sort and Insertion sort.	4
Ex. 2	i) Write a 'C' Program to Implement Singly Linked List with Operations: (i) Insert at end, (ii) Insert After, (iii) Delete (iv) Display ii) Write a 'C' Program to Create Two Polynomials using a Linked List. iii) Write a 'C' Program to implement Doubly Linked List iv) Write a 'C' Program to Implement Circular Linked list	4

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Ex. 3	i) Write a 'C' Program to perform PUSH and POP Operations on a Stack using a Linked List ii) Write a 'C' Program to perform PUSH and POP Operations on Stack using an Array iii) Write a 'C' Program to print given string in reverse using recursion iv) Write a 'C' Program to perform INSERT and DELETE Operations on Linear Queue using an Array. v) Write a 'C' Program to perform INSERT and DELETE operations on Linear Queue using a Linked List.	4
Ex. 4	i) Write a 'C' Program to perform INSERT and DELETE operations on Circular Queue using an Array. ii) Write a 'C' Program to perform INSERT and DELETE operations on Circular Queue using a Linked List.	4
Ex. 5	Write a 'C' Program to Create a Priority Queue using a Linked List.	2
Ex. 6	i) Write a 'C' Program to Implement BST (Binary Search Tree) and Traverse in In-Order. ii) Write a 'C' Program to Traverse BST in Preorder, and Post-Order.	2
Ex. 7	Write a 'C' Program to Implement a Threaded Binary Tree (TBT).	2
Ex. 8	Write a 'C' Program to Implement Graph traversal: algorithms: Depth First Search and Breadth First Search.	4
Ex. 9	Write a 'C' Program to implement Prim's and Kruskals Algorithms, Dijkstra's algorithm	4
Ex. 10	Write a 'C' Program to implement Hashing Techniques	2
Ex. 11	Develop a Parcel Delivery Management System for a logistics company. Parcels are managed and routed through delivery centers using the following operations: i) Stack is used for last-minute returned parcels (LIFO) ii) Queue is used to manage delivery queue iii) Binary Tree stores delivery zones and parcels under each zone iv) Use Graph to represent delivery network and find the shortest delivery path	4
Ex. 12	Design and implement a College Admission System where students apply for various courses. The system should maintain a record of student data and support operations like: i) Add new student ii) Display all students sorted by merit iii) Search for student by roll number or name iv) Remove a student record v) Create a waiting list using Linked List	6

Text Books:

1)	E. Horwitz , S. Sahani, Anderson-Freed, — Fundamentals of Data Structures in C‖, Second Edition, Universities Press.
2)	Y. Langsam, M.J. Augenstein, A.M.Tenenbaum, —Data structures using C and C++‖, Pearson Education, Second Edition.

Reference Books:

1)	Data Structures using C++ by Y. Langsam, M. Augenstein, A. Tenenbaum

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2)	NarasimhaKarumanchi, —Data Structures and Algorithm Made Easyl, Fifth Edition, CareerMonk publication
3)	J. Tremblay, P. Soresan, —An Introduction to data Structures with applicationsl, TMHPublication, 2nd Edition.

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Semester-II (w.e.f. A.Y. 2025-26)

Digital Techniques (25UET12006)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	3	3	**MSE:**	30 Marks
Tutorials:	-	-	**ICA:**	10 Marks
Practical:	-	-	**ESE:**	60 Marks
Total:	3	3	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Discuss the number system and perform arithmetic operation on given binary number	
CO 2	Explain functionality of any gate with the help of its truth table.	
CO 3	Use of Boolean expressions to realize logic circuits.	
CO 4	Illustrate combinational circuits using logic gates.	
CO 5	Model sequential circuits using Flip Flops.	

Unit	***Course Contents***	***No. of lectures (hrs.)***
Unit 1	**Number systems and Logic Gates:** Decimal, Binary, Octal and Hexadecimal, Binary arithmetic Operation: addition, subtraction, multiplication and division, Compliments: 1's and 2's complements, subtraction by 1's and 2's complement method, Conversion: Binary to decimal, octal, hexadecimal conversion and vice versa, Basic and Universal Logic gates Equivalent electrical circuits, truth table and functional operation of each gates.	9
Unit 2	**Boolean Algebra:** Laws of Boolean algebra, Duality Theorem Standard Boolean representation: Sum of Product (SOP) and Product of Sum(POS), Min-term and Max-term, conversion between SOP and POS forms, realization using NAND /NOR gates Karnaugh map method for simplification of Boolean expression.	8

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Unit 3	**Combinational Logic Circuits:** Arithmetic Circuits: Half adder, full adder, half and full, subtractor, 1's and 2's complement subtractor circuit, 2's complement subtractor/adder, circuit using K Map Multiplexer and Demultiplexer.	8
Unit 4	**Sequential Logic Circuits:** Flip-Flops: S-R, J-K, T and D. Truth table and logic circuits of each flip-flop Shift Registers: Series and parallel, shift, Serial in serial out, Shift Register. Counters: Ripple counter, Mod counter, up – down counter, synchronous and asynchronous counters.	7
Unit 5	**Memories:** Types- Primary memory, Secondary Memory, Organization, Dimension, Memory Bank, Features, Applications: RAM (SRAM, DRAM), ROM (PROM, EPROM, EEPROM), Programmable Arrays : PLA, PAL.	7
Text Books:		
1)	Modern Digital Electronics by R.P. Jain, McGraw-Hill Publishing, New Delhi	
2)	Fundamentals of Digital Circuits byAnand Kumar ,PHI learning Private limited	
Reference Books:		
1)	Digital Fundamentals by Floyd, Thomas Pearson Education India, Delhi	
2)	Digital Techniques by Godse ,A.P. Technical publications	
3)	Principles of digital electronics by Malvino and Leach, TMH, New Delhi	
4)	Digital Design by Mano ,M. Morris Pearson, New Delhi	
5)	Digital electronics :Principles, devices and applications by A.K. Maini John Willy and Sons	

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Semester-II (w.e.f. A.Y. 2025-26)

Object Oriented Programming (25UCS12101)

Teaching Scheme:			Evaluation Scheme:	
	No. of Hrs./week	No. of Credits		
Lectures:	1	1	MSE:	-
Tutorials:	-	-	ICA:	25 Marks
Practical:	-	-	ESE:	-
Total:	1	1	OE/POE:	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Differentiate between procedural and object-oriented programming paradigms, and identify the features and structure of a basic C++ program.	
CO 2	Apply fundamental concepts of C++ such as control structures, functions, arrays, and strings to develop basic programs..	
CO 3	Demonstrate the use of classes, objects, constructors, destructors, and OOP concepts like encapsulation, abstraction, and polymorphism.	
CO 4	Illustrate inheritance, including its types, use of virtual base classes, and constructor implementation in derived classes.	
CO 5	Demonstrate programs using file handling mechanisms and handle exceptions with try, catch, and user-defined blocks.	

Unit	*Course Contents*	*No. of lectures (hrs.)*
Unit 1	**Introduction to OOP and C++:** Introduction to object-oriented programming (OOP), Programming paradigms: procedural vs object-oriented, Benefits and applications of OOP's, Difference between C and C++, Header files, Basic structure of C++ program, Datatypes, variables, input/output, Operators, Control statements, functions and parameter passing, Arrays, Strings.	3
Unit 2	**Classes and Objects :** Defining a class and creating objects, Member variables and member functions, Access specifiers: public, private, protected, static data, OOP's concept-Polymorphism-Compile-time polymorphism and Run-time polymorphism, Encapsulation, Abstraction, Constructors and their types, destructors.	3

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Unit 3	**Extending Classes Using Inheritance :** Introduction to Inheritance, Types of Inheritance, Program using virtual base class, use constructor in the given derived class, virtual base class, abstract class, constructors in derived class	3
Unit 4	**Dynamic Memory and Pointers :** Dynamic memory management, new and delete operators, Pointers in C++, Pointers to objects and members.	2
Unit 5.	**File Handling and Exception Handling :** File stream classes: if stream, of stream, f stream, File operations: open, read, write, close, Binary file handling, Introduction to exception handling, try, catch, throw, Multiple catch blocks, User-defined exceptions.	3
Text Books:		
1)	E. Balagurusamy, Object Oriented Programming with C++, McGraw-Hill Publication, 6th Edition, 2013.	
2)	Robert Lafore Object Oriented Programming in C++ Pearson Education India	
Reference Books:		
1)	P. J. Deitel, H. M. Deitel, C++ How to Program, PHI Publication, 9th Edition, 2012.	
2)	Let Us C++ – YashavantKanetkar	
3)	B jarne Stroustrup, The C++ Programming Language, Addison-Wesley Publication, 4th Edition, 2013.	

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Semester-II (w.e.f. A.Y. 2025-26)

Object Oriented Programming Lab (25UCS12102)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	-	-	**MSE:**	-
Tutorials:	-	-	**ICA:**	25 Marks
Practical:	2	1	**ESE:**	-
Total:	2	1	**OE/POE:**	50 Marks

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Demonstrate the use of variables ,constants,arithmatic and control structures in solving problems.	
CO 2	Implement data structures.	
CO 3	Demonstrate the applications of classes, objects, constructors, destructors, and OOP concepts like encapsulation, abstraction, and polymorphism.	
CO 4	Illustrate the use of inheritance in Programming and demonstrate file handling mechanisms.	

Ex.	***Experiment Details***	***No. of Ex. Sessions (hrs.)***
Ex. 1	Develop a program using Constants, Variables, arithmetic expression, operators.	4
Ex. 2	Develop a program to implement decision making statements (if-else, switch).	2
Ex. 3	Develop a program to demonstrate control structures (for, while, do-while).	2
Ex. 4	A) Develop a program to implement 1-dimension array. B) Develop a program to perform matrix operations using multi-dimensional array.	2
Ex. 5	Write a Program to create a class Student with data members: name, roll number, marks. Accept and display using member functions.	2
Ex. 6	Write a program to implement all types of constructors.	2
Ex. 7	Write a program to demonstrate Compile time and Run-time Polymorphism.	2
Ex. 8	Write a program for implementing Single inheritance.	2
Ex. 9	Write a program to create a file, write student data, and read it back using of stream and if stream.	2
Ex.10	Case Study: Student Result Management System (in C++).	6

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Text Books:	
1)	E. Balagurusamy, Object Oriented Programming with C++, McGraw-Hill Publication, 6th Edition, 2013.
2)	Robert Lafore Object Oriented Programming in C++ Pearson Education India.
Reference Books:	
1)	P. J. Deitel, H. M. Deitel, C++ How to Program, PHI Publication, 9th Edition, 2012.
2)	Let Us C++ – Yashavant Kanetkar.
3)	Bjarne Stroustrup, The C++ Programming Language, Addison-Wesley Publication, 4th Edition, 2013.

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Semester-II (w.e.f. A.Y. 2025-26)

Scripting Languages Lab (25UGS12103)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	-	-	**MSE:**	-
Tutorials:			**ICA:**	50 Marks
Practical:	4	2	**ESE:**	-
Total:	4	2	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Identify and understand basic syntax and semantics of scripting languages like HTML, CSS, and JavaScript.	
CO 2	Develop simple interactive web pages using scripting constructs such as DOM manipulation and form validation.	
CO 3	Implement scripting logic to perform dynamic operations in web applications.	
CO 4	Debug and test client-side scripts using browser tools and error-handling techniques.	
CO 5	Design mini web-based projects integrating HTML, CSS, JavaScript, and validation logic for real-time usability.	

Ex.	***Experiment Details***	***No. of Ex. Sessions (hrs.)***
Ex. 1	Create a basic web page using HTML that includes headings, paragraphs, links, images, and lists.	2
Ex. 2	Design a registration form using HTML <form>, input types, and attributes (like required, pattern).	2
Ex. 3	Style a webpage using CSS to format layout, fonts, background, borders, hover effects, and colors.	2
Ex. 4	Create a navigation menu using HTML and CSS (inline, internal and external style sheets).	2
Ex. 5	Use Java Script to display a greeting message based on time (e.g., Good Morning/Afternoon/Evening).	2
Ex. 6	Form validation using JavaScript: Validate name, email, password, and mobile number before submission.	2
Ex. 7	Implement a simple image slider/carousel using JavaScript DOM and CSS transitions.	2

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Ex. 8	Create a To-Do List App: Add, delete, and mark items as complete using JavaScript.	2
Ex. 9	Build a mini web calculator using HTML, CSS, and JavaScript to perform arithmetic operations.	4
Ex. 10	Mini Project: Design a complete responsive portfolio or product page integrating HTML, CSS, JS features.	4
Ex. 11	Implement a modal (popup box) that opens on a button click and closes when clicked outside or on "X".	4
Ex. 12	Build a simple image gallery where clicking an image shows it enlarged using JS and CSS.	4
Ex. 13	Use JavaScript to toggle between light and dark themes dynamically by changing CSS class/styles.	4
Ex. 14	Mini Project: Design a complete responsive portfolio or product page integrating HTML, CSS, JS features.	6

Text Books:	
1)	"HTML and CSS: Design and Build Websites" by Jon Duckett – A beginner-friendly and visually rich guide to HTML and CSS fundamentals.
2)	"Eloquent JavaScript: A Modern Introduction to Programming" by MarijnHaverbeke – A deep yet approachable introduction to JavaScript programming.
Reference Books:	
1)	"JavaScript: The Good Parts" by Douglas Crockford – A compact book focusing on the elegant and powerful parts of JavaScript.
2)	"Learning Web Design" by Jennifer Niederst Robbins – Covers HTML, CSS, JavaScript, and web graphics with real-world examples
3)	"Head First HTML and CSS" by Elisabeth Robson and Eric Freeman – Uses a visually rich format to teach HTML and CSS in a fun, engaging way.
4)	"JavaScript and JQuery": Interactive Front-End Web Development" by Jon Duckett – A visual guide to scripting for interactivity using JavaScript and jQuery.
5)	"Web Design with HTML, CSS, JavaScript and jQuery Set" by Jon Duckett – A comprehensive set covering all major scripting languages for front-end development.
6)	"Beginning JavaScript" by Paul Wilton and Jeremy McPeak – A solid guide for beginners exploring JavaScript concepts with practical examples
7)	"Modern JavaScript for the Impatient" by Cay S. Horstmann – Covers modern ES6+ features with a practical, concise approach
8)	"JavaScript: The Definitive Guide" by David Flanagan – A comprehensive and authoritative book for deep JavaScript understanding
9)	"Responsive Web Design with HTML5 and CSS" by Ben Frain – Focuses on responsive design practices, HTML5 structure, and advanced CSS.
10)	"Pro HTML5 and CSS3 Design Patterns" by Michael Bowers, DionysiosSynodinos, and Victor Sumner – Introduces reusable solutions and design approaches using HTML5 and CSS3.

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	FABTECH EDUCATION SOCIETY'S FABTECH TECHNICAL CAMPUS COLLEGE OF ENGINEERING & RESEARCH (An Autonomous Institute)
	First Year B. Tech.
	Semester-II (w.e.f. A.Y. 2025-26)
	Communication Skills (25UGS11401)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	1	1	**MSE:**	-
Tutorials:	-	-	**ICA:**	25 Marks
Practical:	-	-	**ESE:**	-
Total:	1	1	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Use correct grammar, vocabulary, articles and tenses in speaking and writing.	
CO 2	Explain the communication process, types, barriers of communication and ways to overcome them.	
CO 3	Apply interview skills, group discussion techniques and teamwork for career success.	
CO 4	Show communication through effective listening, speaking, reading, and writing.	
CO 5	Developing professional business letters, resumes and emails clearly and correctly.	

Unit	*Course Contents*	*No. of lectures (hrs.)*
Unit 1	**Grammar and Vocabulary for Communication** Articles, Parts of Speech, Tenses, Vocabulary- Prefix, Suffix, Antonyms and Synonyms.	3
Unit 2	**Fundamentals of Communication** Definition, Meaning & Importance of Communication, Process of Communication, Types of Communication: Verbal, Non-verbal, Written, Visual, Barriers to Effective Communication & Ways to Overcome.	3
Unit 3	**Professional Communication and Career Skills** Interview Techniques: Preparation, FAQs, Do's and Don'ts, Group Discussions: Do's and Don'ts, Participation, Evaluation, Time Management and Teamwork in Communication.	3
Unit 4	**Oral Communication & Presentation Skills** Effective Use of L, S, R,W, Listening Skills: Types and Barriers, Public Speaking.	2
Unit 5	**Written Communication Skills** Business Letters, Resume and Cover Letter Writing, Email Writing.	2

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Text Books:	
1)	Technical Communication: Principles and Practice By Meenakshi Raman &Sangeeta Sharma Publisher: Oxford University Press
2)	Communication Skills By Sanjay Kumar &PushpLataPublisher: Oxford University Press
Reference Books:	
1)	Effective Technical Communication By M. Ashraf Rizvi
2)	Developing Communication Skills By Krishna Mohan &MeeraBanerjiPublisher: Macmillan India
3)	Business and Managerial Communication By SaileshSenguptaPublisher: PHI Learning
4)	Objective English By Hari Mohan Prasad & Uma Rani SinhaPublisher: McGraw Hill Education
5)	English for Engineers and Technologists By Dr.Dhanavel S.P.Publisher: Orient BlackSwa
6)	Business Communication By M.J. MathewPublisher: RBSA Publishers
7)	A Course in English Communication By KiranmaiDutt, GeethaRajeevan, C.L. PrakashPublisher: Foundation Books / Cambridge University Press India

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First Year B. Tech.

Semester-II (w.e.f. A.Y. 2025-26)

Communication Skills Lab (25UGS11402)

Teaching Scheme:			**Evaluation Scheme:**	
	No. of Hrs./week	**No. of Credits**		
Lectures:	-	-	**MSE:**	-
Tutorials:	-	-	**ICA:**	25 Marks
Practical:	2	1	**ESE:**	-
Total:	2	1	**OE/POE:**	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Explain common errors in English grammar and rectify them	
CO 2	Show writing & speaking skills through controlled and guided activities	
CO 3	Describe effective presentations aided by ICT tools.	
CO 4	Modify communication skills which enhances their employability skills	
CO 5	Demonstrate interpersonal and soft skills to participate actively in interviews and group discussions.	

Ex.	***Experiment Details***	***No. of Ex. Sessions (hrs.)***
Ex. 1	Self Introduction & Role Plays	2
Ex. 2	SWOT Analysis and Stress Management	2
Ex. 3	PPT Presentation and Non- Verbal Communication	2
Ex. 4	Group Discussion on Technical Topics	2
Ex. 5	Debate Session	2
Ex. 6	LSRW Activities: Storytelling & Listening Circles	2
Ex. 7	Newspaper Reading & Vocabulary Building	2
Ex. 8	News Presentation & Event Narration	2
Ex. 9	Extempore Speaking	2
Ex. 10	Mock Interview Practice	2

Text Books:

1)	Technical Communication: Principles and Practice By Meenakshi Raman &Sangeeta Sharma Publisher:

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	Oxford University Press
2)	Communication Skills By Sanjay Kumar &PushpLataPublisher: Oxford University Press
Reference Books:	
1)	Effective Technical Communication By M. Ashraf Rizvi
2)	Developing Communication Skills By Krishna Mohan &MeeraBanerjiPublisher: Macmillan India
3)	Business and Managerial Communication By SaileshSenguptaPublisher: PHI Learning
4)	Objective English By Hari Mohan Prasad & Uma Rani SinhaPublisher: McGraw Hill Education
5)	English for Engineers and Technologists By Dr.Dhanavel S.P.Publisher: Orient BlackSwa
6)	Business Communication By M.J. MathewPublisher: RBSA Publishers
7)	A Course in English Communication By KiranmaiDutt, GeethaRajeevan, C.L. PrakashPublisher: Foundation Books / Cambridge University Press India

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Semester-II (w.e.f. A.Y. 2025-26)

NSS (25UGS11301)

Teaching Scheme:			Evaluation Scheme:	
	No. of Hrs./week	No. of Credits		
Lectures:	-	-	MSE:	-
Tutorials:	-	-	ICA:	50 Marks
Practical:	4	2	ESE:	-
Total:	4	2	OE/POE:	-

Course Outcomes: At the end of this course, students shall be able to		
CO 1	Explain the aims, objectives, and structure of NSS and its role in nation-building.	
CO 2	Demonstrate social awareness and the ability to identify community problems through participation in regular and special camping activities.	
CO 3	Apply the principles of volunteerism in organizing and participating in community service activities.	
CO 4	Use leadership qualities, teamwork, and communication skills through group activities and social work.	

Ex.	*Experiment Details*	*No. of Ex. Sessions (hrs.)*
Ex. 1	**Introduction to NSS** Historical background of NSS in India and its development, Aims and Objectives of NSS Organizational structures, roles & responsibilities.Emblem sign, NSS badge, Flag, Clap, NSS Songs: LakshyaGeet, SadbhavanaGeet, RashtriyaYuvaGeet.	12
Ex. 2	**NSS Programmes and Activities and Role of Youth** Concept of NSS activities, Regular activities, Special camp, Day Camps,Financial pattern of the scheme, Role of Youth, Understanding Youth, Understanding the community, Youth a subagents of social change, Issues, challenges and opportunities for youth, Youth-adult partnership, Voluntarism need and importance.	14
Ex. 3	**Activity Based Programmes** Awareness Programmes – Seminar, workshops, celebration of National and International days, Personality Development programmes, group activities, etc.,Yoga day celebration Rally, Campus Cleaning, Tree plantation, Blood donation, Medical checkup, Health Awareness camp, etc.	14

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Ex. 4	**NSS Programmes** Implementation of Central, State Govt. and Local governing bodies and NGO Program Activities or Directed by University, Yuva Portal, Voter awareness, Skill Development, Entrepreneurship and Rural development, Youth exchange program, Women Empowerment.	12
Text Books:		
1)	NSS and Youth Development" by Dr.SunitaAgarwalla	
2)	Text Book of National Service Scheme (Volume –I)	
Reference Books:		
1)	National Service Scheme (NSS) (Mumbai University)	

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