Course	Bachelor of Technology (B.Tech.)	Semester - 1
Type of Course	Engineering Science	
Prerequisite	Basic Mathematics, Algebra, Geometry	
Course Objective	To provide foundational knowledge and skills in key mathematical concepts necessary for advanced study and practical application in various fields.	

Teaching Scheme (Contact Hours)				Assessment Scheme			
				Theory Marks			Total Marks
Lecture	Tutorial	Lab	Credit	SEE	CIA	LAB	
3	0	0	3	70	30	-	100

*SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)*

Course Content		**T** - Teaching Hours | **W** - Weightage		
Sr.	**Topics**		**T**	**W**
1	**Successive differentiation Expansion of functions**		15	25
	Review of Differentiability, Successive differentiation: nth Derivative of xm, nth Derivative of , nth Derivative of , nth Derivative of , nth Derivative of , nth Derivative of , nth Derivative of ,nth Derivative of , nth Derivative of , nth Derivative of , nth Derivative of .Use of Partial Fraction.Leibnitz theorem for the nth Derivative of the Product of two Functions (Without Proof) Determination of the value of the nth Derivative of a function for x=0			
2	**Partial derivative**		15	27
	Function of several variables, limits & continuity, partial derivatives of the first order, partial derivatives of higher orders, differentiation of a function of a function, which variable is to be regarded as constant. Euler's theorem on homogeneous functions: homogeneous functions, Euler's theorem on homogeneous functions (without proof), total derivative, and the chain rule: Differentiation of implicit function, partial differentiation of implicit function Jacobians.			
3	**Application of Partial differentiation**		15	23
	Geometrical Interpretation of partial Derivatives, Tangent plane and Normal line to a surface, Linearization and Linear Approximation, Partial Derivative with constrained variables, Taylor's expansions for functions of two variables, errors and approximations, Maxima and Minima of functions of two variables, working rule to find Maximum and or Minimum Values of a function f(x, y), Lagrange's method of undetermined multipliers.			
4	**Matrix**		15	25
	Review of matrices, review of determinant, elementary row and column transformation, elementary matrices, to compute the inverse of matrices by elementary transformation (Gauss Elimination), Rank of a matrix, Normal form (Canonical form), Rank of Matrix by Triangular Form, solution of simultaneous equations, consistency of a system of linear equations, homogeneous equations, vectors, linear dependence and independence of vectors, linear dependence and independence of vectors by rank method.			
		Total	60	100

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyze	Evaluate	Create
Weightage	50	20	10	10	5	5

NOTE : This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

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Course Outcomes

At the end of this course, students will be able to:

CO1	Student will be able to solve problem based on successive differentiation and Leibnitz rule.
CO2	Student will be able to understand basic concept of partial differential equation.
CO3	Student will be able to understand the application of partial differential equation.
CO4	Student will be able to explain Lagrange's Method of Undetermined Multipliers.
CO5	Student will be able to find the rank of matrix and able to solve system of equations.

Reference Books

1.	**Higher Engineering Mathematics (TextBook)** By B.V. Ramana, | TMG
2.	**Advance Engineering Mathematics (TextBook)** By R.K. Jain & S.R.K. Iyenger | Narosa Publishing House
3.	**Advanced Engineering Mathematics** By C.Ray Wylie & Louis C. Barrett, | TMG
4.	**Advanced engineering mathematics (TextBook)** By Mishra V P | V P Mishra Publishers, New Delhi 2009

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Course	Bachelor of Technology (B.Tech.)	Semester - 1
Type of Course	Ability Enhancement Courses	
Prerequisite	Basic English, Fundemental Writing Skills	
Course Objective	To enhance effective verbal and written communication skills while fostering personal growth and professional confidence.	

Teaching Scheme (Contact Hours)				Assessment Scheme			
				Theory Marks		LAB	Total Marks
Lecture	Tutorial	Lab	Credit	SEE	CIA		
0	0	2	1	-	-	50	50

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

T - Teaching Hours | **W** - Weightage

Sr.	Topics	T	W
1	**Fundamentals of grammar**	12	25
	Parts of Speech (Noun, Pronoun, Adjective, Verb, Adverb, Conjunction, Preposition, Interjection) Article Tense: Application of tenses with respect to time, All tenses & their Sub-divisions Forming of Sentences & Clauses, "WH's Concepts, Understanding Sentences, Punctuation I, Degree of comparison I (Positive, Comparative & Superlative), Tenses (Introduction & Usage) Vocabulary (Roots, Prefix, Suffix, Homonyms, Synonyms & Antonyms)Auxiliaries, Modal Verbs		
2	**Listening**	11	25
	Introduction, Definition of Listening, Listening vs Hearing, Process of Listening, Problems Students Face in Listening, Strategies of Listening, Barriers to Listening, Listening in the Workplace, Activities That Help you to become better listeners.		
3	**Reading**	11	25
	Introduction, The Reading Process, Reading and Meaning, Methods to improve Reading, Strengthening your Vocabulary, Understanding Graphics and Visual Aids, Previewing, Reading in thought Groups, Avoiding the Re-reading of the same phrases, Barriers to Reading, Skills for Speed Reading, Sub-Skills of Reading, Skimming, Scanning, Extensive Reading, Intensive Reading, Reading E-Mail, E-Books, Blogs and Web Pages.		
4	**Letter writing**	11	25
	Formal and informal; CV; Report Writing; Presentation as a skill Elements of Presentation Strategies – Audience – Objectives – Medium - Key Ideas, Structuring The Material, Organizing Content, Audio -Visual Aids – Handouts - Use of Power Point.		
	Total	45	100

Reference Books

1.	**High School English Grammar &Composition (TextBook)** By Wren & Martin | Blackie
2.	**Learn English vocabulary at a Glance** By Dr. Rakesh Bharadwaj | Dr. Rakesh Bharadwaj
3.	**Kenneth, Anderson, Tony Lynch, Joan Mac Lean. (TextBook)** By Study Speaking. | New Delhi: CUP
4.	**Effective Business Communication** By Asha Kaul | Prentice Hall – Economy Edition
5.	**Writing with a purpose (TextBook)** By Champa Tickoo and Jaya Sasikumar | oxford University Press, Mumbai

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Course	Bachelor of Technology (B.Tech.)	Semester - 1
Type of Course	Core Courses	
Prerequisite	Basic Programming Knowledge, HTML/CSS	
Course Objective	To provide comprehensive knowledge of JavaScript, from basic syntax and concepts to advanced techniques and best practices for web development.	

Teaching Scheme (Contact Hours)				Assessment Scheme			
				Theory Marks			
Lecture	**Tutorial**	**Lab**	**Credit**	**SEE**	**CIA**	**LAB**	**Total Marks**
2	0	2	3	25	25	50	100

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content		**T** - Teaching Hours	**W** - Weightage	

Sr.	Topics	T	W
1	**JavaScript Fundamentals**	10	20
	Introduction to JavaScript , Setting up the development environment , Basic syntax and data types , Variables and constants , Operators and expressions , Control structures (if-else, switch, loops) , Functions and scope , Objects and arrays , Error handling and debugging		
2	**Modern JavaScript (ES6+)**	10	20
	Let and const , Arrow functions , Template literals , Destructuring assignment , Spread and rest operators , Enhanced object literals , Classes and inheritance , Modules (import/export) , Iterators and generators		
3	**Asynchronous JavaScript**	10	20
	Introduction to asynchronous programming , Callbacks , Promises , Async/await , Handling asynchronous errors , Fetch API and AJAX , Working with external APIs		
4	**Introduction to Node.js**	10	20
	What is Node.js? , Setting up a Node.js environment , Node.js modules and npm , Creating a basic server with HTTP module , Working with file system , Streams and buffers , Event-driven programming with EventEmitter , Building RESTful APIs with Express.js , Middleware and routing in Express.js		
5	**Advanced Backend Development with JavaScript**	10	20
	Building real-time applications with WebSockets , Testing and debugging Node.js applications , Performance optimization techniques , Security best practices , Deployment strategies (Heroku, AWS) , Practice problems and coding challenges to solve complex JavaScript issues		
	Total	50	100

Reference Books		
1.	**A Smarter Way to Learn JavaScript by Mark Myers (TextBook)** By Mark Myers	
2.	**A Modern Introduction to Programming (TextBook)** By Marijin Haverbeke	3rd Edition	

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List of Practical	
1.	Write a program that takes two numbers and performs addition, subtraction, multiplication, and division. Log the results.
2.	Write a program that prints numbers from 1 to 10 using loop.
3.	Write a function that takes two numbers as parameters and returns their sum. Call the function with different values and log the results.
4.	Write an arrow function that filters out even numbers from an array.
5.	Create an array of strings. Use filter to create a new array with strings longer than 3 characters.
6.	Write a JavaScript program that reads the contents of a file asynchronously using the fs module and prints the contents to the console. Use a callback function to handle the asynchronous operation.
7.	Setup a nodejs environment on your system . Install nodejs , expressJs, Mongodb
8.	Create a class hierarchy to model a simple organization system using JavaScript&39;s ES6 class syntax.
9.	Create a simple calculator that performs arithmetic operations (addition, subtraction, multiplication, division) using callbacks.
10.	Create a basic Node.js server that responds with "Hello, World!" when accessed.
11.	Creating a basic server with HTTP module
12.	Create a Node.js script that writes "Hello, World!" to a file.
13.	Create a simple Express.js application and implement middleware to log the request details.
14.	Problem: Write a function to check if a given string is a palindrome.
15.	Problem: Write a function to find the largest number in an array.
16.	Problem: Write a function that prints numbers from 1 to 100. For multiples of three, print "Fizz" instead of the number, and for multiples of five, print "Buzz". For numbers which are multiples of both three and five, print "FizzBuzz".
17.	Create an API to take data from user from the FrontEnd

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EVOLVING THINKING MINDS

Course	Bachelor of Technology (B.Tech.)	**Semester - 1**
Type of Course	Core Courses	
Prerequisite	Basic Command Line Skills, Fundamental Programming Knowledge	
Course Objective	To equip learners with the skills to efficiently use Git for version control and GitHub for collaboration in modern software development.	

Teaching Scheme (Contact Hours)				Assessment Scheme			
				Theory Marks		**LAB**	**Total Marks**
Lecture	**Tutorial**	**Lab**	**Credit**	**SEE**	**CIA**		
2	0	2	3	25	25	50	100

*SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)*

Course Content		**T** - Teaching Hours	**W** - Weightage	
Sr.	**Topics**		**T**	**W**
1	**Introduction to Version Control and Git**		10	20
	Introduction to Version Control Systems (VCS) ,, Benefits of using Git , Installing Git on Windows, macOS, and Linux ,, Configuring Git (user name, email, and other settings) ,, Basic Git commands: init, clone, status, add, commit, log ,, Understanding the Git workflow (working directory, staging area, repository)			
2	**Working with Repositories**		10	20
	Creating and cloning repositories , Understanding commits and commit messages , Viewing commit history with git log , Understanding branching and merging , Creating and working with branches (branch, checkout, merge) , Resolving merge conflicts , Deleting and renaming branches			
3	**Advanced Git Operations**		10	20
	Understanding and using git stash , Rewriting history with git rebase , Interactive rebase (git rebase -i) , Cherry-picking commits (git cherry-pick) , Tagging commits (git tag) , Working with remote repositories (remote, fetch, pull, push) , Forking and contributing to open-source projects			
4	**Collaborating with GitHub**		10	20
	Introduction to GitHub and its features ,, Creating and managing GitHub repositories ,, Cloning GitHub repositories ,, Understanding GitHub workflows: Issues, Pull Requests, Code Reviews ,, Creating and managing Pull Requests ,, Collaborating on repositories with Issues and Projects ,, Utilizing GitHub Wikis and Pages			
5	**Automation and Deployment with GitHub**		05	20
	Introduction to GitHub Actions , Setting up CI/CD pipelines with GitHub Actions , Writing and running workflows , Deploying applications using GitHub Actions , Automating common tasks with GitHub Actions , Integrating third-party services with GitHub			
		Total	45	100

Reference Books	
1.	**Pro Git Paperback (TextBook)** By Scott Chacon , Ben Straub, Pub. Year 2014

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EVOLVING THINKING MINDS

Course	Bachelor of Technology (B.Tech.)	Semester - 1
Type of Course	Core Courses	
Prerequisite	Basic Computer Skills, Fundamental Understanding of Web Browsers	
Course Objective	To provide a comprehensive introduction to web development by teaching the core technologies of HTML, CSS, and JavaScript for building and styling interactive websites.	

Teaching Scheme (Contact Hours)				Assessment Scheme			
				Theory Marks			Total Marks
Lecture	Tutorial	Lab	Credit	SEE	CIA	LAB	
3	0	2	4	70	30	50	150

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content		**T** - Teaching Hours | **W** - Weightage		
Sr.	Topics		T	W
1	**Introduction to Web Development and HTML**		12	20
	Overview of Web Development, Front-end vs Back-end, Basic Structure of a Web Page, Introduction to HTML, HTML Elements and Attributes, Common HTML Tags (headings, paragraphs, links, images, lists, tables). **Lab Activities:** ◦ Setting up the development environment ◦ Creating your first HTML page ◦ Creating a multi-page website with navigation			
2	**Unit 2: Introduction to CSS**		12	15
	Introduction to CSS, CSS Syntax and Selectors, Colors, Fonts, and Text Styling, The Box Model, CSS Positioning (static, relative, absolute, fixed), Flexbox Layout, CSS Grid Layout, Responsive Web Design (Media Queries). **Lab Activities:** ◦ Applying CSS to HTML pages ◦ Styling text and layouts ◦ Creating responsive layouts using Flexbox and Grid ◦ Implementing a responsive navigation bar			
3	**Unit 3: Introduction to JavaScript**		12	20
	Introduction to JavaScript, JavaScript Syntax and Variables, Data Types and Operators, Control Structures (if, else, switch, loops), Functions and Scope, Arrays and Objects, Introduction to ES6 Features. • **Lab Activities:** ◦ Writing basic JavaScript programs ◦ Creating interactive forms ◦ Creating and manipulating arrays and objects			
4	**Unit 4: JavaScript in the Browser**		12	20

Course Content			T - Teaching Hours | W - Weightage	
Sr.	**Topics**		**T**	**W**

	The Document Object Model (DOM), Selecting and Manipulating DOM Element, Event Handling, Introduction to AJAX and Fetch API, Basic Error Handling.
	
	Lab Activities:
	
	•
	    ◦
	        ▪ Creating dynamic web pages with DOM manipulation
	        ▪ Implementing event listeners for user interactions
	        ▪ Fetching data from APIs and displaying it on the web page			

5	**Unit 5: Version Control and Final Project**		12	25

	Introduction to Git and GitHub, Basic Git Commands (init, clone, add, commit, push, pull), Collaborating with GitHub, Project Planning and Development, Best Practices in Front-end Development, Course Review and Q&A.
	
	Lab Activities:
	
	•
	    ◦
	        ▪ Setting up a Git repository
	        ▪ Pushing and pulling code to/from GitHub
	        ▪ Final Project: Building a fully functional and responsive website
	        ▪ Presenting the final project			

		Total	60	100

Course	Bachelor of Technology (B.Tech.)	Semester - 1
Type of Course	Core Courses	
Prerequisite	Basic Computer Skills, Understanding of Design Principles, Basic Knowledge of Web Design	
Course Objective	To equip students with foundational skills in UI/UX design and proficiency in using Figma for creating intuitive and visually appealing user interfaces.	

Teaching Scheme (Contact Hours)				Assessment Scheme			
				Theory Marks		**LAB**	**Total Marks**
Lecture	**Tutorial**	**Lab**	**Credit**	**SEE**	**CIA**		
2	0	2	3	25	25	50	100

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content		**T** - Teaching Hours | **W** - Weightage	
Sr.	**Topics**	**T**	**W**
1	**How to approach design as a developer** Why design for developers, Getting started with design education,	10	20
2	**Introduction to Figma** Getting started with Figma, Labs on Figma	10	20
3	**UX Design for Developers** Understanding design sprints, Understanding the user, Information architecture, Accessibility in design, How to build good digital products, Psychology in UX design	10	20
4	**Creating Prototypes in Figma** User research, User journey mapping, Wireframing, Prototyping	05	20
5	**UI Design for Developers** Visual design principles, Visual hierarchy, Working with text, Layouts and spacing, Working with colours, Working with images, Creating depth in design, Working with components	10	20
	Total	45	100

Reference Books	
1.	**About Face (TextBook)** By Alan Cooper,Robert Reimann | Wiley Publishing, Pub. Year 2014
2.	**Designing and Prototyping Interfaces with Figma: Learn essential UX/UI design principles by creating interactive prototypes for mobile, tablet, and desktop; (TextBook)** By Fabio Staiano,, Pub. Year 2022
3.	**Hands-on UX design for developers** By Elvis Canziba | Packt, Pub. Year 2018
4.	**Refactoring** By Adam Wathan and Steve Shoger
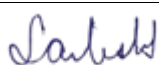
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Course	Bachelor of Technology (B.Tech.)		Semester - 1
Type of Course	Core Courses		
Prerequisite	Logical Thinking, Basic Programming Concepts		
Course Objective	To develop students' problem-solving skills through hands-on programming practice and algorithmic thinking		

Teaching Scheme (Contact Hours)				Assessment Scheme			
				Theory Marks			**Total Marks**
Lecture	**Tutorial**	**Lab**	**Credit**	**SEE**	**CIA**	**LAB**	
3	0	2	4	70	30	50	150

SEE - Semester End Examination, CIA - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content				

T - Teaching Hours | **W** - Weightage

Sr.	Topics	T	W
1	**Introduction**	15	20
	Fundamental of Computer- Basic block diagram of Computer components, hardware, software, memory, generation of computer, Flowcharts and algorithm **Overview of C-** Introduction, Importance of C, Sample C programs, Basic structure of C programs, Programming style, Executive a C program. **Constants, Variables, and Data Types-** Introduction, Character Set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Declaration of Variables, assigning values to variables, Defining symbolic constants. **Operators and Expression-** Introduction, Arithmetic of Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bit-wise Operators, Special Operators, Arithmetic Expressions, Evaluation of expressions, Precedence of arithmetic operators, Some computational problems, Type conversions in expressions, Operator precedence and associatively, Mathematical function		
2	**Management Input and Output Operators, Decision-Making statement**	10	20
	Introduction, reading a character, writing a character, formatted input, formatted output, the structure of c program input-output function Introduction, Decision-making with IF statement, Simple IF statement, the IF ELSE statement, Nesting of IF … ELSE statements, The ELSE IF ladder, The switch statement, the turnery (? :) Operator, the GOTO statement.		
3	**Loop and arrays**	10	20
	Decision-Making Looping- Introduction, the WHILE statement, the DO statement, and The FOR statement, Jump in loops Break and continue. **Array-** Introduction, One-dimensional arrays, Two-dimensional arrays, Initialization of two-dimensional arrays, Concept of Multidimensional arrays		
4	**Handling of Character strings, User-Defined Functions**	15	20
	Introduction, Declaring and initializing string variables, reading string from the terminal, writing a string to the screen, Arithmetic operations on characters, Putting string together, String Operations String Copy, String Compare, String Concatenation and String Length, String Handling functions. Introduction, Need for user-defined functions, The form of C function, Return values, and their types, Calling a Function, category of functions, No arguments and no return values, Arguments with return values, Handling of non-integer functions, Nesting of functions, Recursion, Functions with arrays, The scope and Lifetime of variables in functions, ANSI C functions.		
5	**Structures and Unions, Pointers, File Management in C**	10	20
	Introduction, Structure definition, giving values to members, Structure initialization, Comparison of structures, Arrays of structures, Arrays within structures, Structures within Structures, Structures, and functions, Unions, Size of structures, and Bit fields. Introduction, understanding pointers, Accessing the address of a variable, Declaring and initializing pointers, Accessing a variable through its pointer, Pointer expressions, Pointer increments and scale factor, Pointers and arrays, Pointers and character strings, Pointers and Functions, Pointers, and structures. Dynamic memory allocation. Introduction, Defining files and their Operations, Error handling during I/O operations, Random access files, Command line arguments		
	Total	60	100

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Suggested Distribution Of Theory Marks Using Bloom's Taxonomy				
Level	Remembrance	Understanding	Application	Analyze
Weightage	10	30	30	30

NOTE : This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Course Outcomes

At the end of this course, students will be able to:	
CO1	Formulate algorithm/flowchart for given arithmetic and logical problem
CO2	Translate the algorithm/flowchart into C program using the correct syntax and execute it.
CO3	Write a program using branching ,looping, iteration and recursion.
CO4	Implement simple program using structure and Union.
CO5	Implement simple program using array and pointer.

Reference Books

1.	**Let Us C (TextBook)** By Yashwant Kanetker | BPB Publication
2.	**ANSI C** By Balaguruswami | Wiley India Pvt Ltd
3.	**"Computer programming" (TextBook)** By Ashok N. Kamthane | Pearson Education

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List of Practical	
1.	Write a program to display "Hello Computer" on the screen.
2.	Write a C program to display Your Name, Address and City in different lines.
3.	Write a C program to find the area of a circle using the formula: Area = PI * r.
4.	Write a C program to print the multiply, addition, division & subtraction value of two accepted numbers.
5.	Write a C program to swap a variable value of no1 and no2.
6.	Write a program to find a maximum from given two numbers.
7.	Write a program to find a minimum from given two numbers.
8.	Write a program to find a maximum from given three numbers.
9.	Write a program to find a minimum from given three numbers.
10.	Write a C program to print a multiplication table from 1 to 12.
11.	Write a C program to find addition of 45 to 65 using loop.
12.	Write a C program to check whether a number is prime or not.
13.	Write a C program to show month using Switch statement.
14.	Write a C program to print the 3x3 array.
15.	Write C program to print range of 101 to 130 using array.
16.	Write a C program to find the length of the given string.
17.	Write a C program to copy one string into another string.
18.	Write a C program to concate (merge) the two strings.
19.	Write a C program to print the following shape. * * * * * * * * * *
20.	Write a C program to find the addition of two values using function.

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