Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Information Technology

B.Tech. (CSE-Artificial Intelligence/ Data Science-IBM)
Choice Based Credit System (CBCS)-2025-29
SEMESTER-I

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCSH102	DCC	Statistics, Probability and Calculus	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES:

The student will have ability to:

1.	To introduce fundamental concepts of statistics and probability.

COURSE OUTCOMES:

Upon completion of the subject, students will be able to:

1.	To learn and understand the basic concepts of probability theory.
2.	To learn types of data and graphical representation.
3.	To learn descriptive statistics, probability distribution and sampling techniques.

SYLLABUS

UNIT I — **10 HOURS**

Introduction to Statistics: Definition of Statistics. Basic objectives. Applications in Various Branches of Science with Examples. Collection of Data: Internal and External Data, Primary and Secondary Data. Population and Sample, Representative Sample.

UNIT II — **9 HOURS**

Descriptive Statistics: Classification and Tabulation of Univariate Data, Graphical Representation, Frequency Curves. Descriptive Measures - Central Tendency and Dispersion. Bivariate Data. Summarization, Marginal and Conditional Frequency Distribution.

UNIT III — **8 HOURS**

Probability: Concept of Experiments, Sample Space, Event. Definition of Combinatorial Probability. Conditional Probability, Bayes Theorem. Probability Distributions: Discrete & Continuous Distributions, Binomial, Poisson and Geometric Distributions, Uniform, Exponential, Normal, Chi-Square, T, F Distributions.

UNIT IV — **7 HOURS**

Expected Values and Moments: Mathematical Expectation and its Properties, Moments (Including Variance) and their Properties, Interpretation, Moment Generating Function

UNIT V — **8 HOURS**

Calculus: Basic Concepts of Differential and Integral Calculus, Application of Double and Triple Integral.

TEXTBOOKS:

1. Introduction of Probability Models, S.M. Ross, Academic Press, N.Y.

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCSH102	**DCC**	**Statistics, Probability and Calculus**	**60**	**20**	**20**	**0**	**0**	**3**	**0**	**0**	**3**

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

2.	Fundamentals of Statistics, vol. I & II, A. Goon, M. Gupta and B. Dasgupta, World Press.

REFERENCE:

1.	Higher Engineering Mathematics, B. S. Grewal, Khanna Publication, Delhi.
2.	A first course in Probability, S.M. Ross, Prentice Hall.
3.	Probability and Statistics for Engineers, (Fourth Edition), I.R. Miller, J.E. Freund and R. Johnson, PHI.
4.	Introduction to the Theory of Statistics, A.M. Mood, F.A. Graybilland D.C. Boes, McGraw Hill Education.
5.	Advanced Engineering Mathematics, (Seventh Edition), Peter V. O'Neil, Thomson Learning.
6.	Advanced Engineering Mathematics, (Second Edition) M. D. Greenberg, Pearson Education.
7.	Applied Mathematics, Vol. I & II, P. N. Wartikarand J. N. Wartikar, Vidyarthi Prakashan.

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTPH101	BS	Applied Physics	60	20	20	30	20	3	1	2	5

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

COURSE OBJECTIVES:	
The student will have ability to:	
1.	To develop the comprehensive understanding of laws of physics.
2.	To develop ability to apply laws of physics for various engineering applications.
3.	To develop the experimental skills, ability to analyze the data obtained experimentally to reach substantiated conclusions.
COURSE OUTCOMES:	
Upon completion of the subject, students will be able to:	
1.	Student will be able to comprehend laws of physics.
2.	Student will be able to apply laws of physics for various engineering applications.
3.	Student will be able to determine physical parameter experimentally and will be able to analyze the data obtained experimentally to draw substantiate conclusions.

SYLLABUS

UNIT I	**10 HOURS**
Quantum Physics: Introduction to Quantum hypothesis, Matter wave concept, Wave Group and Particle velocity and their relations, Uncertainty principle with elementary proof and applications to microscope and single slit, Compton Effect, Wave function and its physical significance. Development of time dependent and time independent Schrodinger wave equation, Applications of time independent Schrodinger wave equation.	
UNIT II	**9 HOURS**
Solid State Physics: Free electron model, Qualitative Analysis of Kronig Penney Model, ffective mass, Fermi level for Intrinsic and Extrinsic semiconductors, P-N junction diode, Zener diode, Tunnel diode, Photodiode, Solar-cells, Hall Effect, Introduction to Superconductivity, Meissner effect, Type I & II Superconductors.	
UNIT III	**8 HOURS**
Nuclear Physics: Nuclear Structure & Properties Nuclear models: Liquid drop with semi-empirical mass formula & shell model. Particle accelerators: Cyclotron, Synchrotron, Betatron. Counters and Detectors: Giger-Muller counters, Bainbridge Mass Spectrograph and Auston Mass Spectrograph.	
UNIT IV	**7 HOURS**
Laser & Fiber Optics: Stimulated and Spontaneous Emission, Einstein's A&B Coefficients, Population Inversion, Pumping, Techniques of Pumping, Optical Resonator, Properties and Applications of Laser, Ruby, Nd:YAG, He-Ne lasers. Introduction to Optical fibre, Acceptance angle and cone, Numerical Aperture, V- Number, Ray theory of propagation through optical fibre, Pulse dispersion , applications of optical fibre.	
UNIT V	**8 HOURS**
Wave Optics: Introduction to Interference, Fresnel's Bi-prism, Interference in Thin films, Newton's rings experiment, Michelson's interferometer and its application, Introduction to Diffraction and its Types, Diffraction at single slit, double slit, resolving power, Rayleigh criterion, Resolving power of grating, Concept of polarized light,	

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTPH101	**BS**	**Applied Physics**	**60**	**20**	**20**	**30**	**20**	**3**	**1**	**2**	**5**

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Double refraction, quarter and half wave plate, circularly & elliptically polarized light.	
TEXTBOOKS:	
1.	Engineering Physics by Dr. S. L. Gupta and Sanjeev Gupta, Dhanpat Rai Publication, New Delhi.
2.	Engineering Physics by Navneet Gupta, DhanpatRai Publication, New Delhi.
3.	Engineering Physics by H. J. Sawant, Technical Publications, Pune, Maharastra.
4.	Engg Physics by M.N. Avdhanulu& P.G. Kshirsagar, S.Chand&Co.Edition (2010).
5.	Fundamentals of Physics by Halliday, Wiley, India.
REFERENCE:	
1.	Concepts of Modern Physics by Beiser, TMH, New Delhi.
2.	Solid State Physics by Kittel,Wiley India.
3.	Atomic and Nuclear physics by Brijlal and Subraminiyan.
4.	LASERSs and Electro Optics by Christopher C. Davis, Cambridge Univ. Press (1996).
5.	Optroelectronics an Introduction by J. Wilson &J.F.B.Hawkes, “” Prentice-Hall II Edition.
6.	LASER theory and applications by A. K. Ghatak&Tyagarajan, TMH (1984).
7.	Optics by Ghatak, TMH.
LIST OF PRACTICALS	
1.	Measurement of radius of curvature “R” of convex lens by Newton’s ring experiment.
2.	Measurement of Numerical aperture of fiber by LASER.
3.	Determination of Energy band gap ‘Eg’ of Ge using Four Probe method.
4.	Measurement of Frequency of A.C. mains by electrically maintained vibrating rod.
5.	Measurement of Resolving Power of Telescope.
6.	Measurement of “λ” of LASER light source using Diffraction Grating.
7.	Determination of Planck’s constant by using photocell.
8.	Determination of Energy band gap (Eg) using PN Junction Diode.
9.	To determine the mass of cane sugar dissolved in water using half shade polarimeter.
10.	To study forward and reverse characteristics of Zener diode.
11.	To study forward and reverse characteristics of P-N diode.
12.	To study characteristics of Photo diode.
13.	To study characteristics of LDR.
14.	μ and ω of given prism using spectrometer.
15.	Measuring height of a given object using Sextant.

COURSE OBJECTIVES:

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCS101M	BEC	Introduction to Computer Science and Engineering	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

The student will have ability to:	
1.	To introduce the fundamentals concepts of Computer system.
2.	Understanding the basic concepts and features of various kinds of Operating systems.
3.	Learning the Concepts of Office Automation Tools.
4.	To provide knowledge of Networking, Internet, Communication and security.

COURSE OUTCOMES:

Upon completion of the subject, students will be able to:	
1.	Understand the basic terminologies of Computer System.
2.	Gain knowledge about various kinds of Operating Systems and their features.
3.	Learn the Concepts of Office Automation Tools.
4.	Understand Networking, Internet, Communication and Security.

SYLLABUS

UNIT I	**8 HOURS**
Introduction: Introduction to Computers, Hardware and Software, Classification and History of Computers, Functions of the different Units, Applications of Computers, Representation of data and information, Machine language, Assembly Language, High level Language, Number System and Conversion.	

UNIT II	**6 HOURS**
Introduction to Operating System: Definition of Operating System, Types and Functions of Operating Systems, Free and Open-Source Software. **Introduction to Database Management System:** Introduction, File Oriented Approach and Database, importance and applications of DBMS.	

UNIT III	**8 HOURS**
Introduction to Computer Network: Introduction, importance of Computer Network, LAN, MAN, WAN, Networking Devices, World Wide Web, Web Browser, viruses, worms, malware, Use of Antivirus software, Good Computer Security Habits.	

UNIT IV	**8 HOURS**
Introduction to HTML: HTML Documents, SGML, Basic structure of an HTML document, Text Elements, Tag Elements, Special Character elements, Image tags, HTML Table tags and lists, Anchor tag, Name tag, Hyperlinks – FTP/HTTP/HTTPS, Static and Dynamic Web Pages.	

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCS101M	BEC	Introduction to Computer Science and Engineering	60	20	20	0	0	3	0	0	3

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

UNIT V	**6 HOURS**
Office Automation Tools: Introduction to Microsoft Word, Elements of word Processing and Working Objectives, MSWord Screen and its Components, Features of word, Introduction to MS-Excel, MS-Excel Screen and Its Components, Features of Excel, Manipulation of cells, Formatting of Spreadsheet and Cells, Formulas and Functions, Introduction to MS-PowerPoint, MS-PowerPoint Screen and Its Components, Features of PowerPoint, Working with MS-PowerPoint, Preparation of Slides, Creation of Presentation, Slide Manipulation and Slide Show, Presentation of the Slides.	

TEXTBOOKS:

1. E Balagurusamy, “Fundamentals of Computers”, TMH.
2. Silakari and Shukla, “Basic Computer Engineering”, Wiley India.

REFERENCE:

1. V. Rajaraman, Neeharika Adabala, “Fundamentals of Computers”, PHI.
2. Ajoy Kumar Ray and Tinku Acharya, “Basic Computer Engineering”, PHI.
3. P K Sinha, “Fundamentals of Computers”, BPB Publications.
4. J. P. Tremblay and R.B. Bunt, “An Introduction of Computer Science –An Algorithmic Approach”, TMH.
5. Faithe Wempen, "Computing Fundamentals: Introduction to Computers”, Wiley.
6. Norton, Peter, “Introduction to Computers”, Fourth revised, Mc-Graw-Hill.
7. Reema Thareja, “Fundamental of Computers”, Oxford University Press.

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
HUCS101	SEC	Communication Skills	60	20	20	30	20	1	0	2	2

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COURSE OBJECTIVES:	
The student will have ability to:	
1.	Develop the second language learners 'ability to enhance and demonstrate LSRW Skills.
2.	Enable students to acquire English Language Skills to further their studies at advanced levels.
3.	Prepare students to become more confident and active participants in all aspects of their undergraduate programs

COURSE OUTCOMES:	
Upon completion of the subject, students will be able to:	
1.	Enhance confidence in their ability to read, comprehend, organize, and retain written in formation.
2.	Write grammatically correct sentences for various forms of written communication to express oneself.

SYLLABUS

UNIT I	**10 HOURS**
C**ommunication**: Nature, Meaning, Definition,Verbal and Non Verbal Communication Barriers to Communication.	
UNIT II	**9 HOURS**
Basic Language Skills: Grammar and usage- Parts of Speech, Tenses, S-V Agreement, Preposition, Article.	
UNIT III	**8 HOURS**
Basic Language Skills: Types of Sentence, Direct - Indirect, Active - Passive voice, Phrases& Clauses.	
UNIT IV	**7 HOURS**
Business Correspondence: Business Letter, Parts & Layouts of Business Resume and Job application, E-mail writing.	
UNIT V	**8 HOURS**
Report Writing: Importance of Report, Types of Report, Structure of a Report.	

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
HUCS101	SEC	Communication Skills	60	20	20	30	20	1	0	2	2

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical; **C** - Credit; ***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

TEXTBOOKS:	
1.	Ashraf Rizvi.(2005).EffectiveTechnical Communication. NewDelhi:TataMcGrawHill
2.	Adair, John (2003). Effective Communication. London: Pan Macmillan Ltd.
3.	A.J.ThomsonandA.V.Martinet(1991).APracticalEnglishGrammar(4thed).Newyork:Ox-ford IBH Pub.
REFERENCE:	
1.	Kratz, Abby Robinson (1995). Effective Listening Skills. Toronto: ON: Irwin Professional Publishing.
2.	Prasad, H. M.(2001) How to Prepare for Group Discussion and Interview. New Delhi: Tata McGraw-Hill.
3.	Pease, Allan. (1998).Body Language. Delhi: SudhaPublications.
LIST OF PRACTICALS	
1.	Self Introduction
2.	Reading Skills and ListeningSkills
3.	OralPresentation
4.	Linguistics andPhonetics
5.	JAM (Just aMinute)
6.	GroupDiscussion

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCS103M	DCC	Computer System Organization	60	20	20	30	20	3	0	2	4

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COURSE OBJECTIVES:	
The student will have ability to:	
1.	To understand the basic model of a modern computer with its various processing units.
2.	To impart knowledge on CPU and it's processing of programs.
3.	To provide the information for hardware utilization methodology.
4.	To impart knowledge of Multiprocessor and inter-process communication.

COURSE OUTCOMES:	
Upon completion of the subject, students will be able to:	
1.	Understand the architecture of a modern computer.
2.	Explain the functional behavior of CPU and its other processing units.
3.	Knowledge of the Peripherals of a Computer System.
4.	Give the information to speed-up the working of Computer System.

SYLLABUS

UNIT I	**10 HOURS**
Computer Basics: Von Newman model, CPU, Memory, I/O, Bus, Memory registers, Program Counter, Accumulator, Instruction register, Micro-operations, Register Transfer Language, Instruction cycle, Instruction formats and addressing modes.	

UNIT II	**9 HOURS**
Control Unit Organization: Hardwired control unit, Micro-programmed control unit, Control Memory, Address Sequencing, Micro Instruction formats, Micro program sequencer, Microprogramming. **Arithmetic and Logic Unit**: Arithmetic Processor, Addition, subtraction, multiplication, and division, Floating point, and decimal arithmetic.	

UNIT III	**8 HOURS**
Input Output Organization: Modes of data transfer – program controlled, interrupt driven and direct memory access, Interrupt structures, I/O Interface, Asynchronous data transfer, I/O processor, Data transferring approaches and modes.	

UNIT IV	**7 HOURS**
Memory organization: Memory Hierarchy, Cache Memory - Organization and types of cache mappings, Virtual memory, Memory Management Hardware.	

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCS103M	DCC	Computer System Organization	60	20	20	30	20	3	0	2	4

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UNIT V	**8 HOURS**
Multiprocessors: Pipeline and Vector processing, Instruction and arithmetic pipelines, Vector and array processors, Interconnection structure and inter-processor communication.	

TEXTBOOKS:	
1.	M. Morris Mano, Computer System Architecture, Fourth edition, Pearson Education, 2015.
2.	William Stallings, Computer Organization and Architecture, Seventh Edition, PHI, 2009.

REFERENCE:	
1.	Andrew S. Tanenbaum, Structured Computer Organization, Sixth Edition, Pearson Education, 2016.
2.	John P. Hayes, Computer Architecture and Organizations, Third edition, Mc-Graw Hills, New Delhi, 2017.
3.	John L. Hennessy and David A. Patterson, Computer Architecture a quantitative approach, Fourth Edition, Elsevier, 2007.
4.	Ramesh Gaonkar, Microprocessor Architecture, Programming and Applications with 8085, fifth Edition, Prentice Hall, 2015.
5.	Nicholas Carter, Computer Architecture (Schaum's), Third Edition, TMH, 2012.
6.	Carl Hamacher, Computer Organization, Fifth Edition, TMH, 2002.

LIST OF PRACTICALS	
1.	Study of peripherals, components of a Computer System.
2.	Write a C program for sum of two binary numbers.
3.	Write a C program for multiplication of two binary numbers.
4.	Write a C program to implement Booth's algorithm for multiplication.
5.	Write a C program to implement Restoring Division Algorithm.
6.	Write the working of 8085 simulator GNUsim8085 and basic architecture of 8085 along with small introduction.
7.	Study the complete instruction set of 8085 and write the instructions in the instruction set of 8085 along with examples.
8.	Write an assembly language code in GNUsim8085 to implement data transfer instruction.
9.	Write an assembly language code in GNUsim8085 to store numbers in reverse order in memory location.
10.	Write an assembly language code in GNUsim8085 to add two 8 bit numbers stored in memory and also storing the carry.

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			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCS107M	SEC	Program Development using C	0	0	0	30	20	0	0	2	1

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COURSE OBJECTIVES:	
The student will have ability to:	
1.	Identify situations where computational methods and computers would be useful.
2.	Given a computational problem, identify and abstract the programming task involved.
3.	Approach the programming tasks using techniques learned and write pseudo-code.
4.	Choose the right data representation formats based on the requirements of the problem.
5.	Use the comparisons and limitations of the various programming constructs and choose the right one for the task in hand.
6.	Write the program on a computer, edit, compile, debug, correct, recompile and run it.
7.	Identify tasks in which the numerical techniques learned are applicable and apply them to write programs, and hence use computers effectively to solve the task.

COURSE OUTCOMES:	
Upon completion of the subject, students will be able to:	
1.	Understand the basic terminologies used in computer programming.
2.	Proficient in using the basic constructs of C, to develop a computer program.
3.	Understand the use of functions, pointers, arrays and files in programming.
4.	Understand the fundamentals of procedure-oriented programming and be able to apply it in computer program development.

SYLLABUS

UNIT I	**7HOURS**

Introduction to Programming Languages: Evolution of Programming Languages, Structured Programming, The Compilation Process, Object Code, Source Code, Executable Code, Operating Systems, Interpreters, Linkers, Loaders, Fundamentals Of Algorithms, Flowcharts.

UNIT II	**10 HOURS**

Introduction to 'C' Language: Character Set. Variables and Identifiers, Built-In Data Types. Variable Definition, Arithmetic Operators and Expressions, Constants And Literals, Simple Assignment Statement, Basic Input/ Output Statement, Decision Making Within A Program, Conditions, Relational Operators, Logical Connectives, If Statement, If-Else Statement, Loops: While Loop, Do While, For Loop. Nested Loops, Switch Statement.

UNIT III	**8 HOURS**

Arrays and Pointers: Array Manipulation; Searching, Insertion, Deletion of an Element from an one dimensional Array; Finding the Largest/Smallest Element in an Array; Two Dimensional Arrays, Addition/Multiplication of

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COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME					L	T	P	CREDITS
			THEORY			PRACTICAL					
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCS107M	SEC	Program Development using C	0	0	0	30	20	0	0	2	1

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Two Matrices, Transpose of a Square Matrix, Address Operators, Pointer Type Declaration, Pointer Assignment, Pointer Initialization, Pointer Arithmetic, Pointer Arrays.

UNIT IV — **7 HOURS**

Functions: Modular Programming and Functions, Prototype of a Function: Parameter List, Return Type, Function Call, Block Structure, Call by Reference, Call by Value, Recursive Functions and Arrays as Function Arguments

UNIT V — **8 HOURS**

Structure: Structure Variables, Initialization, Structure Assignment, Structures and Arrays: Arrays of Structures.

TEXTBOOKS:

1. Gottfried BS – Programming with C, TMH publications.
2. David Griffiths**, "**Head First C: A Brain-Friendly Guide**"** O Reilly Media Inc. 2011.

REFERENCE:

1. Allen B. Tucker, "Programming Languages", Tata McGraw Hill.
2. Tennence W. Pratt, "Programming languages design and implementation", Prentice Hall of India.
3. Herbert Schildt "C: Complete Reference", Tata McGraw Hill 2000.
4. Yashwant Kanetkar, "Let us C", BPB Publication, 16th Edition 2018.
5. Fundamentals of Programming Languages, R. Bangia, Cyber Tech.
6. Greg Perry and Dean Miller, "C Programming Absolute Beginner's Guide 3rd Edition", Que Publishing 2013.

LIST OF PRACTICALS

1. Write a C program to display "This is my first C Program".
2. Write a C program to calculate area and circumference of a circle.
3. Write a C program to perform addition, subtraction, division and multiplication of two numbers.
4. Write a program to calculate simple and compound interest.
5. Write a program to swap values of two variables with and without using third variable.
6. Write a program to display the size of every data type using "size of" operator.
7. Write a program to illustrate the use of unary prefix and postfix increment and decrement operators.
8. Write a program to input two numbers and display the maximum number.
9. Write a program to find the largest of three numbers using ternary operators.
10. Write a program to find the roots of quadratic equation.
11. Write a program to input name, marks of 5 subjects of a student and display the name of the student, the total

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	marks scored, percentage scored and the class of result.
12.	Write a Program to Check Whether a Number is Prime or not.
13.	Write a program to find the largest and smallest among three entered numbers and also display whether the identified largest/smallest number is even or odd.
14	Write a program to find the factorial of a number.
15.	Write a program to check number is Armstrong or not.(Hint: A number is Armstrong if the sum of cubes of individual digits of a number is equal to the number itself).
16.	Write a program to check whether a number is Palindrome or not
17.	Write a program to generate Fibonacci series.
18.	Write a program to find GCD (greatest common divisor or HCF) and LCM (least common multiple) of two numbers.
19.	Write a Program to Search an element in array.
20.	Write a Program to perform addition of all elements in Array.
21.	Write a Program to find the largest and smallest element in Array.
22.	Write a Program for deletion of an element from the specified location from Array.
23.	Write a Program to access an element in 2-D Array.
24.	Write a program for addition of two matrices of any order in C.
25.	Write a Program to multiply two 3 X 3 Matrices.
26.	Write a program to add, subtract, multiply and divide two integers using user-defined type function with return type.
27.	Write a program to generate Fibonacci series using recursive function.
28.	Write a program to find the sum of all the elements of an array using pointers.
29.	Write a program to swap value of two variables using pointer.
30	Write a program to add two numbers using pointers.
31	Write a program to input and print array elements using pointer.
32	Write a program to create a structure named company which has name, address, phone and Of Employee as member variables. Read name of company, its address, phone and non-employee. Finally display this member's value.
33	Write a program to read Roll No, Name, Address, Age & average-marks of 12 students in the BCT class and display the details from function.
34	Write a program to add two distances in feet and inches using structure.

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BTIBM105N	**DC**	**Software Foundation and Programming (1. Clean Coding; 2. Javascript; 3. NodeRed; 4. NodeJS)**	0	0	0	30	20	0	0	2	1

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COURSE OBJECTIVES:	
The student will have ability to:	
1.	Elevate your professionalism and increase your code quality
2.	Foundation for a professional development career
3.	Provide students a clear vocabulary for evaluating code quality.
4.	Understanding the basic ideas of programming
5.	Implementation of java script codes
6.	Implementation of node.js codes
7.	Learn the language of web: HTML and CSS
COURSE OUTCOMES:	
Upon completion of the subject, students will be able to:	
1.	Understand about the clean code.
2.	Explain the importance of naming conventions.
3.	Understand the importance of comments in the applications.
4.	Understand the purpose of formatting and objects.
5.	Describe JavaScript primitives and objects
6.	Explain how variables are declared and used in JavaScript
7.	Describe JavaScript control structures
8.	Describe functions in JavaScript
9.	Describe the document object model (DOM) hierarchy
10.	Describe the window and document objects
11.	Understand the Node.js framework
12.	Work with Node Projects
13.	Master Express.js
14.	Installing NodeJS and Nodeclipse Plugin
15.	Understand basic routing in Node.js
16.	Understand file systems in Node.js
17.	Serving static content in Node.js
18.	Learn how Express.js connects with MongoDB
19	Perform CRUD operations using NodeJS and MongoD
20.	Identify the DOM objects that are commonly used in JavaScript applications for working With

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	HTML documents
SYLLABUS	
UNIT I	
Introduction to Clean Coding Understand the importance of bad and good code. Understand the importance of meaningful distinct names. Usage of domain and function names Usage of exceptions and its error code names/descriptions. Understand about clean and bad comments. Understand the process of vertical and horizontal formatting. **Introduction to Web-designing** Html basic commands, Webpage creation using tags like formatting tags, table, frame and form tags. CSS types and properties with examples.	
UNIT II	
Objects Learn about data abstraction. Understand the data and object antisymmetric. **Javascript Basics** Nature of JavaScript language Understand JavaScript primitive types. **Javascript objects** Understand Java Script Array Objects Understand Java Script Date Objects Understand Java Script Error Objects	
UNIT III	
Javascript variables and Control statements Understand how to define JavaScript Variables	

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Work Java Script If statements
Work Java Script switch statements Work
JavaScript for and while loop statements

Javascript Functions

Declare a JavaScript function
Creating custom objects with functions
Adding functions to prototypes
Self-executing functions

UNIT IV

Client side Javascript

Understand Scripts in HTML documents
Describe the document object model (DOM) hierarchy
Overview of the DOM specification levels
Describe the window and document objects
Accessing document elements
Common API in web and XML scripting

Node JS Introduction

Understand NodeJS and its features
Understand Express Framework.
Understand Key features of MongoDB

UNIT V

Installation and Configuration

Install NodeJS on command line

Hands on: Create sample NodeJS + Express project using command line

Install Node eclipse plugin

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Hands-on: Create sample NodeJS + Express project using Eclipse

File System

Understand__dirname and filename

Understand synchronous vs Asynchronous file read

Understand View Templates

How to serve static content in NodeJS

Connecting to the database using NodeJS

Install and Setup MongoDB

NodeJS Mongo Driver

Perform CRUD Operation

Understand Connection Pooling using NodeJS and Mongo Driver

Hands on Develop Web Application using Node JS and Mongo DB

TEXTBOOKS:

1. Mastering HTML, CSS & Javascript Web Publishing by Lemay Laura, BPB Publications, ISBN: 9788183335157, 9788183335157
2. Javascript by Flanagan David, Packt publishers, ISBN: 9789350237311, 9789350237311
3. Web technologies-black book by Dreamtech Press publications, ISBN-13 : 978-9351199076, ISBN-10 : 935119907X

REFERENCE:

1. Java script by example by Dani Akash Dani Akash S, Kindle Edition
2. Java script: the good parts by D Crockford, Kindle Edition
3. IBM Study Materials

LIST OF PRACTICALS

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1.	Designing a table containing the properties like cellpadding, cellspacing, rowspan, colspan, border etc.
2.	Differentiate between frame and div tag with examples.
3.	Biodata form creation
4.	Implementation of different types of css with properties.
5.	Use of javascript with html and css.
6.	Program to implement javascript conditional statements.
7.	Program to implement javascript switch case.
8.	Javascript all types of loop creation.
9.	Javascript array creation.
10.	Program to implement javascript functions.
11	Program to implement javascript events.
12.	Program to implement javascript objects.
13.	Basic node.js code creation.
14.	Example of MongoDB with node.js.

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