Shri Vaishnav Vidyapeeth Vishwavidyalaya

B.Tech. (CSE-Big Data Analytics/Cloud and Mobile Computing/Artificial Intelligence/DS/FSDB-IBM)
Choice Based Credit System (CBCS) 2020-21
SEMESTER I

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BTMACS101	UG	**Mathematics-I**	3	1	0	4	60	20	20	0	0

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 the students with the Fundamentals of the Calculus of Matrices, Differential Equations and Numerical Analysis.

Course Outcomes:
After the successful completion of this course students will be able to
1. Understand and apply the basics of the differential calculus.
2. Know the fundamental principles of the integral calculus and apply them.
3. Apply the techniques in the numerical analysis.
4. Know the numerical solution of the system of linear algebraic equations.
5. Understand and apply the basics of the vector calculus.

Syllabus:

UNIT I
Differential Calculus: Limits of functions, continuous functions, uniform continuity, montone and inverse functions. Differentiable functions, Rolle'stheorem, mean value theorems and Taylor's theorem, power series. Functions of several variables, partial derivatives, chain rule, Tangent planes and normals. Maxima, minima, saddle points, Lagrange multipliers, exact differentials

UNIT II
Integral Calculus: Riemann integration, fundamental theorem of integral calculus, improper integrals.Application to length, area, volume, surface area of revolution. Multiple integrals with application to volume, surface area, Change of variables.

UNIT III
Numerical Analysis:Number Representation and Errors: Numerical Errors; Floating Point Representation; Finite Single and Double Precision Differences; Machine Epsilon; Significant Digits.
Numerical Methods for Solving Nonlinear Equations: Method of Bisection, Secant Method, False Position, Newton-Raphson's Method, Multidimensional Newton's Method, Fixed Point Method and their convergence.

UNIT IV
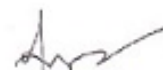**Numerical Methods for Solving System of Linear Equations:** Norms; Condition Numbers,

Forward Gaussian Elimination and Backward Substitution; Gauss-Jordan Elimination; FGE with Partial Pivoting and Row Scaling; LU Decomposition; Iterative Methods: Jacobi, Gauss Siedal; Power method and QR method for Eigen Value and Eigenvector.

UNIT V

Vector Calculus: Gradient and directional derivative. Divergence and Curl of Vector point function, line and surface integrals. Green"s, Gauss" and Stokes" theorems and their applications.

Text Books:
1. T. M. Apostol, Calculus, Volume I, 2nd Ed, Wiley, 1967.
2. T. M. Apostol, Calculus, Volume II, 2nd Ed, Wiley,1969.
3. K. E. Atkinson, Numerical Analysis, John Wiley, Low Price Edition(2004).
4. S. D. Conte and C. de Boor, Elementary Numerical Analysis - An Algorithmic Approach, McGraw-Hill,2005.
5. B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers,Delhi

Reference Books:
1. R. G. Bartle and D. R. Sherbert, Introduction to Real Analysis, 5th Ed, Wiley,1999.
2. J. Stewart, Calculus: Early Transcendentals, 5th Ed, Thomas Learning (Brooks/ Cole), Indian Reprint,2003.
3. J. Stewart, Calculus: Early Transcendentals, 5th Ed, Thomas Learning (Brooks/ Cole), Indian Reprint,2003.
4. J. D. Hoffman, Numerical Methods for Engineers and Scientists, McGraw-Hill,2001.
5. M.K Jain, S.R.K Iyengar and R.K Jain, Numerical methods for scientific and engineering computation (Fourth Edition), New Age International (P) Limited, New Delhi,2004.
6. S. C. Chapra, Applied Numerical Methods with MATLAB for Engineers and Scientists, McGraw-Hill2008.

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SEMESTER I

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	THEORY END SEM University Exam	THEORY Two Term Exam	THEORY Teachers Assessment*	PRACTICAL END SEM University Exam	PRACTICAL Teachers Assessment*
BTPH101	UG	Applied Physics	3	1	2	5	60	20	20	30	20

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:
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:
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
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
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
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.
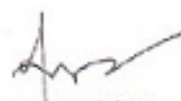
UNIT IV
Laser & Fiber Optics: Stimulated and Spontaneous Emission, Einstein's A&B Coefficients, Population Inversion, Pumping, Techniques of Pumping, Optical Resonator, Properties and

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

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, Double refraction, quarter and half wave plate, circularly & elliptically polarized light.

Text Books:
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 Books:
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 Practical:

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 'E_g' 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 (E_g) 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 CODE | CATEGORY | COURSE NAME | L | T | P | CREDITS | TEACHING & EVALUATION SCHEME | | | | |
| | | | | | | | THEORY | | | PRACTICAL | |
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BTCS102	**UG**	**Introduction to Computer Science and Engineering**	3	0	2	4	60	20	20	0	50

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 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 (Like Word, Excel, Power-point, etc.)
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 (Like Word, Excel, Power-point, etc.)
4. Understand Networking, Internet, Communication and Security.

Syllabus:

UNIT I
Introduction to Computer Fundamentals: Introduction: What is Computer, Objectives, Hardware and software, Block Diagram of The Computer, Functions of the different Units, CPU(Central Processing Unit), Input unit, Output unit, Memory, Storage Devices, Representation of data and information, Computer Languages, Machine language, Assembly language, High level language, Number System and Conversion, Classification of Computers, History and Generations of Computer, Types of Computers, Characteristics of Computers, Introduction to Free and Open Source Software, Definition of Computer Virus, Types of Viruses, Use of Antivirus software. Applications of Computers: Home, Education and Training, Entertainment, Science, Medicine, Engineering etc.

UNIT II
The Operating System: The Graphical User Interface (GUI), Definition of Operating System, Objective, Types and functions of Operating Systems, Windows Operating System, Installing MS Windows, Working with Windows Operating System, System Tools and Applications in windows, MS-DOS (Disk Operating System), Basic DOS commands, Switching Between DOS

and Windows, Comparison of DOS and Windows, System Tools and Applications in MS-DOS, Other Operating Systems Unix, Linux etc.

UNIT III

Office Automation Tools-I: Word Processing Basics, Elements of word Processing and Working, MS-Office (Word, Access, Outlook, Front page etc), Objectives, Starting MS-Word, MS-Word Screen and its Components, Working with MS-Word, Menu Bar, Creating Documents, Using Templates, Saving a documents, Working with documents, Setting up pages of a document, Printing Documents with different options, Using Tables and Columns, Object Linking and Embedding, Hyperlink, Envelopes & Label Creation, Grammar & Spell Check, Mail Merge, Macro Creation, Previewing and Printing Documents.

UNIT IV

Office Automation Tools-II: Spread Sheet: Introduction to MS-Excel, Starting MS-Excel, Basics of Workbook and Spreadsheet, MS-Excel Screen and Its Components, Features of Excel, Elementary Working with MS-Excel, Manipulation of cells, Formatting of Spreadsheet and Cells, Formulas and Functions, Spread sheets for Small accountings, Previewing and Printing a Worksheet. Power-point: Introduction to MS-PowerPoint, Starting MS-PowerPoint, Basics of PowerPoint, MS PowerPoint Screen and Its Components, Features of PowerPoint, Elementary, Elementary Working with MS-PowerPoint, Preparation of Slides, Creation of Presentation, Providing aesthetics, Slide Manipulation and Slide Show, Presentation of the Slides

UNIT V

Computer Communication and Internet: Computers and Communication: Introduction to Computer Networks, Internet and World Wide Web, Communication and Collaboration(Electronic Mail), Basic of electronic mail, Web Browsers and Servers, Introduction to HTML, Use of Computer in Commerce, Internet Applications, Electronic Data Interchange, Electronic Payment System, Internet Security, Privacy, Ethical Issues & Cyber Law.

Text Books:
1. E Balagurusamy , "Fundamentals of Computers ",TMH 2009.
2. Silakari and Shukla, "Basic Computer Engineering ", Wiley India 2011.
3. V. Rajaraman, Neeharika Adabala, "Fundamentals of Computers", Sixth edition PHI 2015
4. Ajoy Kumar Ray and Tinku Acharya ," Basic Computer Engineering", PHI 2011.
5. P K Sinha ,"Fundamentals of Computers " ,Fourth , BPB Publications, 2004.

Reference Books:
1. J. P. Tremblay and R.B. Bunt, "An Introduction of Computer Science –An Algorithmic Approach",TMH 2015.
2. Faithe Wempen , "Computing Fundamentals: Introduction to Computers ", Wiley 2015.
3. Norton, Peter, "Introduction to Computers", Fourth revised ,Mc-Graw-Hill 2000.
4. Reema Thareja , "Fundamental of Computers", Oxford University Press, 2014.

List of Practical:
1. Study and Perform different MS –DOS Commands (Internal and External).
2. Create the "test" directory in the directory you are currently in using MS-DOS.

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SEMESTER I

3. Study of Word – Templates, Styles.
4. Create a new user and give it Administrator privilege for Microsoft windows OS.
5. Create a MS-Word .doc file contain your complete CV.
6. Study and perform different Excel Commands/Functions.
7. Perform MS-Excel Accounting.
8. Create a MS-Excel .xls file contain mark sheet.
9. Display the student's result into a chart using MS-Excel.
10. Create a MS-Power Point Presentation .ppt file covers the topic "Computer's Evolution".
11. Create a MS-Power Point Presentation .ppt file covers the topic "social responsibility".
12. Create a MS-Access database .mdb file to store the results of students.
13. Study of various Network topologies.

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Joint Registrar
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SEMESTER I

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BTEC104	UG	Digital Logic and Circuit Design	3	1	2	5	60	20	20	30	20

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 objective of this course is to-
1. Use of Boolean algebra and Karnaugh Map to simplify logic function.

2. Describe the operation of different Combinational and Sequential Logic Circuits.

Course Outcomes:
After completion of this course the students will be able to-
1. Design an optimal digital logic circuit to meet the given specifications.

2. Evaluate the performance of the given digital logic circuit based on specific criteria for reliable system implementation.

Syllabus:

UNIT I
Number System & Codes: Introduction to number systems, Binary numbers, Octal & Hexadecimal Numbers, Number base Conversion, Signed binary numbers : 1's Complement & 2's Complement representation and their arithmetic operation, Floating point representation, binary codes, BCD,ASCII, EBCDIC, Gray codes, Error detecting and Correcting codes, Hamming codes.

UNIT II
Boolean algebra and Logic gates: Introduction, Logic operations, Axioms and laws of Boolean algebra, Demorgan's theorem, Boolean functions, Canonical and standard forms. Logic gates and their applications, universal gates, NAND-NOR implementation of logic functions. Minimization techniques for logic functions-K-map, Tabular / Quine McCluskey method.

UNIT III
Combinational logic: Arithmetic circuits- Half adder, Full adder, Halfsubtractor, Full subtractor, Parallel and Serial adder, BCD adder, Multiplexer, De-multiplexer, Encoder & Decoder.

UNIT IV
Sequential logic: Introduction, Latch and Flip Flop- S-R, D, JK and T, State diagram, characteristic equation, state table and excitation table, Flip flop conversion, applications of Flip flop, Counters, Registers.

UNIT V

Semiconductor Memories and A/D and D/A converters: Semiconductor Memory – RAM, ROM Organization, operation and their Types, PLD- PAL, PLA, PROM, FPGA, Analog to Digital (A/D)and Digital to Analog (D/A) converters and their types.

Text Books:
1. M. Morris Mano,"Digital Logic and Computer Design", Pearson Education, 2016.
2. S Salivahanan and S Arivazhagan: Digital Circuits and Design,4th Edition, Vikas Publishing House,2012.

Reference Books:
A. Anand Kumar, "Fundamentals of Digital Circuits", 4th Edition, PHI, 2016.
1. Floyd and Jain,"Digital Fundamentals", 10th Edition, Pearson Education India, 2011.
2. Roland J.Tocci,Widmer,Moss, "Digital Systems Principles and Applications", 10th Edition, Pearson 2009.
3. Stephen Brown, ZvankoVranesic, "Fundamentals of Digital Logic Design", 3rd Edition, McGraw Hill, 2017.

List of Practical:
1. To study and test of operation of all logic gates for various IC"s (IC7400,IC7403,IC408,IC74332,IC7486).
2. Verification of DeMorgan's theorem.
3. To construct of half adder and full adder.
4. To construct of half subtractor and full subtractor circuits.
5. Verification of versatility of NAND gate.
6. Verification of versatility of NOR gate.
7. Design a BCD to excess 3code converter.
8. Design a Multiplexer/ Demultiplexer
9. Analysis of various flip flops with Preset and Clear capability.
10. Design of Johnson and Ring counter.
11. Design of synchronous and asynchronous up/down counters.

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COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BTCS104	UG	Principles of 'C' language	3	0	0	3	60	20	20	0	0

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. Identify situations where computational methods and computers would be useful.
2. Give 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
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
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, Infinite Loops, Switch Statement, Structured Programming.

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SEMESTER I

UNIT III

One Dimensional Arrays: Array Manipulation; Searching, Insertion, Deletion of an Element from an Array; Finding the Largest/Smallest Element in an Array; Two Dimensional Arrays, Addition/Multiplication of Two Matrices, Transpose of a Square Matrix, Strings as Array of Characters, Address Operators, Pointer Type Declaration, Pointer Assignment, Pointer Initialization, Pointer Arithmetic, Functions And Pointers, Arrays And Pointers, Pointer Arrays.

UNIT IV

Top-Down Approach of Problem Solving: Modular Programming and Functions, Standard Library of C Functions, Prototype of a Function: Foo1lal Parameter List, Return Type, Function Call, Block Structure, Passing Arguments to a Function: Call by Reference, Call by Value, Recursive Functionsand Arrays as Function Arguments Structure Variables, Initialization, Structure Assignment, Nested Structure, Structures and Functions, Structures and Arrays: Arrays of Structures, Structures Containing Arrays, Unions.

UNIT V

Concept of Files: File Opening in Various Modes and Closing of a File, Reading from a File, Writing onto a File.

Text Books:
1. Tennence W.Pratt, "Programming languages design and implementation", Prentice Hall of India.
2. Allen B. Tucker, "Programming Languages", Tata McGraw Hill.
3. Gottfried BS – Programming with C, TMH publications.
4. Balagurusamy:,"Programming with C++", ANSI C TMH

Reference Books:
1. Roosta- Foundation of Programming Languages,Vikas
2. Jeyapoovan- A First Course in Prog with C, Vikas 8. Programming In C++, Y.I. Shah and M.H. Thaker, ISTE/EXCEL BOOKS
3. Fundamentals of Programming Languages, R. Bangia,Cyber Tech .
4. Kanetkar, Yashvant – Understanding Pointers in C- 2nd Edn. BPB

Chairperson
Board of Studies
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Information Technology & Computer Applications)
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SEMESTER I

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BTIBM105	UG	Software Foundation and Programming (1. Clean Coding; 2. Javascript; 3. NodeRed; 4. NodeJS)	1	0	2	2	0	0	0	60	40

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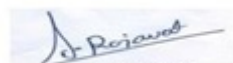***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives:
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:
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 HTML documents

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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
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

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SEMESTER I

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
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

Text Books:
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 Books:
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 Experiments:

1. Designing a table containing the properties like cellpadding, cellspacing, rowspan, colspan, border etc.

2. Differentiate between frame and div tag with examples.

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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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COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BTCS108	UG	**Programming Skills with 'C'**	0	0	2	1	0	0	0	30	20

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. Understand and use the basic programming constructs of C
2. Manipulate various C datatypes, such as arrays, strings, and pointers
3. Isolate and fix common errors in C programs
4. Use memory appropriately, including proper allocation/deallocation procedures
5. Apply object-oriented approaches to software problems in C
6. Write small-scale C programs using the above skills

Course Outcome:
1. Demonstrate a thorough understanding of modular programming by designing programs that require the use of programmer-defined functions.
2. Demonstrate a thorough understanding of arrays by designing and implementing programs that search and sort arrays.
3. Demonstrate a thorough understanding of the object-oriented programming concepts of encapsulation, data abstraction and composition by designing and implementing classes including the use of overloaded functions and constructors.
4. Demonstrate a thorough understanding of the concept of pointers and dynamic memory allocation by designing and implementing programs using pointers and dynamic memory allocation.
5. Demonstrate a thorough understanding of the implementation of programmer-defined functions and classes by writing code, performing unit testing and debugging of multiple complex programs.

Syllabus:

Unit - 1 Introduction to Programming:
Evolution of Programming Languages, Structured Programming, The Compilation Process, Object Code, Source Code, Executable Code, Operating Systems, Interpreters, Linkers, Loaders, Fundamentals of Algorithms, Flow Charts.

UNIT II Programming using C
C data types, int, char, float etc, C Expressions, Arithmetic Operation, Relational and Logic Operations, C Assignment Statements, Extension of Assignment of The Operations, C Primitive Input Output Using getchar and putchar, Exposure to the scanf and printf functions, C Statements, conditional executing using if, else, Optionally Switch and Break Statements may be mentioned.

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UNIT III

Iterations and Subprograms

Concept of loops, Example of Loops in C Using for, while and do-while, Optionally continue may be mentioned, One dimensional arrays and example of iterative programs using arrays, 2-d arrays Use in matrix computations, Concept of Sub-programming, functions Example of functions, Argument passing mainly for the simple variables.

UNIT IV

Pointers and Strings

Pointers, Relationship Between Arrays and Pointers Argument passing using Pointers Array of Pointers, Passing arrays as Arguments, Strings and C String Library.Structure and Unions, Defining C structures, Passing Strings as Arguments Programming Examples.

Unit –V File handling:

Console Input Output Functions, Disk Input Output Functions, Data files, Command Line Arguments, Bitwise Operators, Enumerated Data Types, Type Casting, macros, The C Preprocessor, More About library Functions.

Reference Books:

1. E Balaguruswamy , Object Oriented Programming With C++ , 4th Edition , TMH, 2008
2. Brian W. Kernighan and Dennis M. Ritchie ,"The C Programming Language", 2nd Edition, Prentice-Hall India, New Delhi, 2002
3. Herbert Schildt. "The Complete Reference C ", 4th Edition, TMH, 2000
4. H. Cooper and H. Mullish, Jaico Publishing House. "Spirit of C", 4th Edition, Jaico Publishing House, 2006

List of Practical:

1. Write a program to produce ASCII equivalent of given number.
2. Write a program to find divisor or factorial of a given number.
3. 3.   Write a program to evaluate the following algebraic expressions after reading necessary   values from the user
     a. I   (ax+b)/(ax-b)   II   (x^5+10x^4+8x^3+4x+2)
4. Write a program to find sum of a geometric series.
5. Write a program to cipher a string.
6. Write a program to check whether a given string follows English capitalization rules.
7. Write a program to find sum of the numerical series.
8. Write a program to search whether a given substring exist in an input string or not and then delete this string from input string.
9. Write a recursive program for tower of Hanoi problem.
10. The fibonacci sequence of numbers is 1,1,2,3,5,8……. Based on the recurrence relation
     i. F(n)=F(n-1)+F(n-2)for n>2
     b. Write a recursive program to print the first m Fibonacci number
11. Write a menu driven program for matrices to do the following operation depending on whether the operation requires one or two matrices
     a) Addition of two matrices
     b) Subtraction of two matrices
     c) Finding upper and lower triangular matrices
     l) Trace of a matrix
) Transpose of a matrix

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f) Check of matrix symmetry

g) Product of two matrices.

12. Write a program that takes two operands and one operator from the user perform the operation and then print the answer.

13. Write a program to print pyramid.

14. Write functions to add, subtract, multiply and divide two complex numbers (x+iy) and (a+ib) Also write the main program.

15. Write a program to copy one file to other, use command line arguments.

16. Write a program to mask some bit of a number (using bit operations).

17. An array of record contains information of managers and workers of a company. Print all the data of managers and workers in separate files.