# ShriVaishnavVidyapeethVishwavidyalaya, Indore

## ShriVaishnav Institute of Information Technology

B.Tech. (CSE - Big Data and Cloud Engineering – Impetus Technologies)
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.

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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.

| | |
|---|---|
| **TEXTBOOKS:** | |
| 1. | Introduction of Probability Models, S.M. Ross, Academic Press, N.Y. |
| 2. | Fundamentals of Statistics, vol. I & II, A. Goon, M. Gupta and B. Dasgupta, World Press. |
| 3. | Higher Engineering Mathematics, B. S. Grewal, Khanna Publication, Delhi. |
| | |
| **REFERENCE:** | |
| 1. | A first course in Probability, S.M. Ross,Prentice Hall. |
| 2. | Probability and Statistics for Engineers,(Fourth Edition), I.R. Miller, J.E. Freund and R. Johnson, PHI. |
| 3. | Introduction to the Theory of Statistics, A.M. Mood, F.A. Graybilland D.C. Boes,McGraw Hill Education. |
| 4. | Advanced Engineering Mathematics, (Seventh Edition), Peter V. O'Neil, Thomson Learning. |
| 5. | Advanced Engineering Mathematics, (Second Edition) M. D. Greenberg, Pearson Education. |
| 6. | Applied Mathematics, Vol. I & II, P. N. Wartikar andJ. N. Wartikar,VidyarthiPrakashan. |
| | |

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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** |

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| **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. | Comprehend laws of physics. |
| 2. | Apply laws of physics for various engineering applications. |
| 3. | 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. Compton Effect (Without derivation), Wave function and its physical significance, Energy and Momentum Operator, Development of time dependent and time independent Schrodinger wave equation, Determination of wave function and energy of particle in a one-dimensional box.

| **UNIT II** | **9 HOURS** |
|---|---|

**Solid State Physics:** Basic formulation of Free electron model and Kronig Penny Model, 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, Binding Energy and Mass Defect, Nuclear models:Comparative Study of Liquid drop and Shell Model, Particle accelerators: LINAC, Cyclotron and Betatron. Detectors and Counters: Bainbridge Mass Spectrograph, Giger-Mullercounters,

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| | | | THEORY | | | PRACTICAL | | | | | |
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| **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.

| **UNIT IV** | **7 HOURS** |
|---|---|
| **Laser & Fiber Optics:** Stimulated and Spontaneous Emission, Einstein's A&B Coefficients, Population Inversion, Pumping, Optical Resonator, Properties and Applications of Laser, Ruby, He-Ne lasers. Introduction to Optical fibre, Acceptance angle and cone, Numerical Aperture, applications of optical fibre. | |
| **UNIT V** | **8 HOURS** |
| **Wave Optics:** Introduction to Interference, Constructive and Destructive interference. Interference in Thin films, Newton's rings experiment, Michelson's interferometer, Introduction to Diffraction and its Types, Qualitative Study of Diffraction at single slit, double slit and n-slit (without derivation), Resolving power, Rayleigh criterion, Concept of Polarized light, Brewsters law, Double refraction, Nicho Prism. | |

| **TEXTBOOKS:** | |
|---|---|
| 1. | Engineering Physics by Dr. S. L. Gupta and Sanjeev Gupta, DhanpatRai Publication, NewDelhi. |
| 2. | Engineering Physics by Navneet Gupta, DhanpatRai Publication, NewDelhi. |
| 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, NewDelhi. |
| 2. | Solid State Physics by Kittel,WileyIndia |
| 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 IIEdition. |
| 6. | LASER theory and applications by A. K. Ghatak&Tyagarajan, TMH(1984). Optics by Ghatak,TMH. |
| | |
| **LIST OF PRACTICALS** | |
| 1. | Determination of radius of curvature "R" of convex lens by Newton's ring experiment. |
| 2. | Determination of Frequency of A.C. mains by electrically maintained vibrating rod. |
| 3. | Determination of Resolving Power of Telescope. |
| 4. | Determination of wavelength of LASER using Diffraction Grating. |
| 5. | Determination of Planck's constant using Photocell. |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | | | | |
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| **BTPH101** | **BS** | **Applied Physics** | **60** | **20** | **20** | **30** | **20** | **3** | **1** | **2** | **5** |

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| | |
|---|---|
| 6. | To study forward and reverse characteristics of Zener diode. |
| 7. | To study forward and reverse characteristics of P-N diode. |
| 8. | To study V-I characteristics of Tunnel diode. |
| 9. | To determine Young's Modulus using Cantilever method. |
| 10. | To determine the mass of cane sugar dissolved in water using Half shade Polarimeter. |
| 11. | To study characteristics of Photo diode. |
| 12. | Determination of Energy band gap (Eg) using PN Junction Diode. |
| 13. | Determination of μ and ω of given Prism using Spectrometer. |
| 14. | Measurement of height of a given object using Sextant. |
| 15. | Measurement of Numerical aperture of fiber by LASER. |
| | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | | | | |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| HUCS101 | BS | Communication Skills | 60 | 20 | 20 | 0 | 50 | 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 under graduate 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** |
|---|---|
| **Communication:** 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 | BS | Communication Skills | 60 | 20 | 20 | 0 | 50 | 1 | 0 | 2 | 2 |

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| | |
|---|---|
| **TEXTBOOKS:** | |
| 1. | Abraham Silberschatz, *Operating system concepts*, 10th Ed., John Willey & Sons. INC, 2018. |
| 2. | Andrew S. Tannanbaum, *Modern operating system*, 4th Ed., Pearson Education, 2014. |
| | |
| **REFERENCE:** | |
| 1. | Ashraf Rizvi.(200**5).**Effective Technical Communication. NewDelhi: Tata McGrawHill |
| 2. | Adair, John (2003). Effective Communication. London: Pan Macmillan Ltd. |
| 3. | A.J.ThomsonandA.V.Martinet(1991).APracticalEnglishGrammar(4thed).Newyork:Ox-Ford IBH Pub. |
| 4. | Kratz, Abby Robinson (1995). Effective Listening Skills. Toronto: ON: Irwin Professional Publishing. |
| 5. | Prasad, H. M.(2001) How to Prepare for Group Discussion and Interview. New Delhi: Tata McGraw-Hill. |
| 6. | Pease, Allan. (1998).Body Language. Delhi: Sudha Publications. |
| | |
| **LIST OF PRACTICALS** | |
| 1. | Self-Introduction |
| 2. | Reading Skills and Listening Skills |
| 3. | Oral Presentation |
| 4. | Linguistics and Phonetics |
| 5. | JAM (Just a Minute) |
| 6. | Group Discussion |
| | |

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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 |

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| **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. |
| 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:** Definitionof 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.

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | | | | |
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| BTCS101M | BEC | Introduction to Computer Science and Engineering | 60 | 20 | 20 | 0 | 0 | 3 | 0 | 0 | 3 |

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| **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. | |
| **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. | |

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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 |

**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 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 |

**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** | **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. |
| 3. | Andrew S. Tanenbaum, Structured Computer Organization, Sixth Edition, Pearson Education, 2016. |
| 4. | John P. Hayes, Computer Architecture and Organizations, Third edition, Mc-Graw Hills, New Delhi, 2017 |
| | |
| **REFERENCE:** | |
| 1. | John L. Hennessy and David A. Patterson, Computer Architecture a quantitative approach, Fourth Edition, Elsevier, 2007. |
| 2. | Ramesh Gaonkar, Microprocessor Architecture, Programming and Applications with 8085, fifth Edition, Prentice Hall, 2015. |
| 3. | Nicholas Carter, Computer Architecture (Schaum's), Third Edition, TMH, 2012. |
| 4. | 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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B.Tech. (CSE - Big Data and Cloud Engineering – Impetus Technologies)
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* | | | | |
| BTCS107M | SEC | Program Development using C | 0 | 0 | 0 | 30 | 20 | 0 | 0 | 2 | 1 |

**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. | Given a computational problem, identify and abstractthe 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** | **7 HOURS** |
|---|---|

**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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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 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.
3. Allen B. Tucker, "Programming Languages", Tata McGraw Hill.
4. Tennence W.Pratt, "Programming languages design and implementation", Prentice Hall of India.


**REFERENCE:**


1. Herbert Schildt "C: Complete Reference", Tata McGraw Hill 2000.
2. Yashwant Kanetkar, "Let us C", BPB Publication, 16th Edition 2018.
3. Fundamentals of Programming Languages, R. Bangia,Cyber Tech .
4. 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 "sizeof" 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.

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| | | | 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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| | |
|---|---|
| 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 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 members‟ value. |

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| BTCS107M | SEC | Program Development using C | 0 | 0 | 0 | 30 | 20 | 0 | 0 | 2 | 1 |

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| | |
|---|---|
| 33 | Write a program to read RollNo, 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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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | | | | |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| BTCS101 M(P) | SEC | Introduction to Computer Science and Engineering Lab | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 2 | 1 |

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| **COURSE OBJECTIVES:** | |
|---|---|
| The student will have ability to: | |
| 1. | Students will use a variety of design software to organize, create, publish, and manage a website. |
| 2. | This course also puts emphasis on basic concepts of web design |
| 3. | Provide you the conceptual and technological developments in the field of Internet and web designing. |
| 4. | Course content includes creating a variety of graphic elements including video, animations, rollover effects, backgrounds, and page images |
| | |

| **COURSE OUTCOMES:** | |
|---|---|
| Upon completion of the subject, students will be able to: | |
| 1. | Create an HTML Documents, and establish adequate formatting for presentation purposes. |
| 2. | Import, insert and modify images. |
| 3. | Insert and manipulate tables. |
| 4. | Establish and maintain internal and external link to available resources. |
| 5. | Use special effect to make the expressive, evocative documents. |
| 6. | Insert and manipulate multi-media objects |
| | |

**SYLLABUS**

| **UNIT I** | **8 HOURS** |
|---|---|

**Introduction to HTML:** What is 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, Links to send email messages, Text and Background fonts and styles, Marquee Behavior, Forms related tags. (Action, method, name, input etc.)

| **UNIT II** | **9 HOURS** |
|---|---|

**HTML5**: Introduction of HTML5, Migration from HTML4 to HTML5, New Elements in HTML5, HTML5 different parts layout of a web page, HTML5 Graphics: Canvas, SVG, HTML Media Tags: Inserting audio/video files, Screen / Media control attributes, HTML Object.

| **UNIT III** | **8 HOURS** |
|---|---|

**CSS:** Introduction of CSS, CSS Syntax CSS Id & Class. CSS Styling: styling Backgrounds, styling Text, styling Fonts, styling Links, styling Lists, styling Tables. CSS Box Model: Border, Outline, Margin, Padding.

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| BTCS101 M(P) | SEC | Introduction to Computer Science and Engineering Lab | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 2 | 1 |

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| **UNIT IV** | **8 HOURS** |
|---|---|
| **XML:** Introduction of XML, Cross scripting of XML, XML as intermediate language, Difference between XML and HTML, XML DOM, Tree, Syntax, Elements, Attributes, Namespaces, XPath, XML DTD, Applications, XQuery, XML Schema, XML Parser, XHTML: Introduction of XHTML, XHTML rules over the HTML, conversation HTML to XHTML. | |

| **UNIT V** | **7 HOURS** |
|---|---|
| **CSS Advanced:** Grouping/Nesting, Dimension, Display, Positioning, Floating, Align, Pseudo-class, Pseudo-element, Navigation Bar, Image Gallery, Image capacity, Image Sprites, Media Types, and Attribute Selectors. | |

**TEXTBOOKS:**

| | |
|---|---|
| 1. | Jennifer Niederst Robbins. Learning Web Design, Fifth Edition, O'Reilly Media, Inc, May 2018. |
| 2. | Frain and Ben. Responsive Web Design with HTML5 and CSS3, Second Edition, 2015. |
| 3. | Nicholas c.Zakas. Java Script for Web Developers, Third edition, 2012. |
| 4. | George Q. Huang, K. L Mak. Internet Applications in Product Design and Manufacturing, ISBN: 3540434658, 2003 edition, springer, 2012. |
| | |

**REFERENCE:**

| | |
|---|---|
| 1. | Steven M. Schafer, "HTML, XHTML, and CSS Bible", Fifth Edition, WileyIndia, 2010. |
| 2. | John Duckett,"Beginning HTML, XHTML, CSS, and JavaScript ",WileyIndia, 2010. |
| 3. | Ian Pouncey, Richard York, "Beginning CSS: Cascading Style Sheets for Web Design",3rd edition, Wiley India, 2011. |
| 4. | Achyut S. Godbole, Atul Kahate, Web Technologies, ISBN: 9781259062681,3rd edition, TMH, 2013. |
| | |

**LIST OF PRACTICALS**

| | |
|---|---|
| 1. | Design a Web Page, Insert an image on to the web page such that image is of height 300 and width 300 pixels. The image should have an ALT text in it. |
| 2. | Create a Web page that holds a bulleted list of the names of your friends. Make sure that the bullets are in plain circle. |
| 3. | Create a Frame which would hold both the web page that was created earlier. The frame should be split row-wise into equal halves. |

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SEMESTER-I

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | | | | |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| **BTCS101 M(P)** | **SEC** | **Introduction to Computer Science and Engineering Lab** | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 2 | 1 |

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| | |
|---|---|
| 4. | Create a Web Page to display the marks you got in all subjects of last semester using table. |
| 5. | Create a Form having two boxes with labels as First Name and Last Name. The User should not be allowed to enter the names directly in the text boxes. The input has to be given in the prompt box and then entered values should be given in the textboxes. |
| 6. | Create a Web Page that has a button in the center of the page. Using mouse events change the Message in the statusbar. |
| 7. | Design a Web page that accepts Username and Password. Opens a new window when the password corresponds to a particular value is set by the develop |
| 8. | Design a Web page that consists of 2 text boxes. When the page is first loaded set the focus to the first textbox. The user should not be allowed to leave the box unless enters a value in it. |
| 9. | To convert the HTML code to XHTML code. |
| 10. | To study the XML tree. |
| 11 | To study of Dreamweaver Tool. |
| 12. | To study of a Flash Animation TooL. |
| | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | | | | |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | | | | |
| **BTIT307N** | **SEC** | **Introduction to core JAVA** | 0 | 0 | 0 | 30 | 20 | 0 | 0 | 2 | **1** |

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| Chairperson | Chairperson | Controller of Examination | Joint Registrar |
|---|---|---|---|
| Board of Studies, ShriVaishnavVidyapeeth Vishwavidyalaya, Indore | Faculty of Studies, ShriVaishnavVidyapeeth Vishwavidyalaya, Indore | ShriVaishnavVidyapeeth Vishwavidyalaya, Indore | ShriVaishnavVidyapeeth Vishwavidyalaya, Indore |