Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Technology (Information Technology)

Choice Based Credit System (CBCS) 2016-17

SEMESTER II

COURSE CODE	Category	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTMA201		APPLIED MATHEMATICS-II	60	20	20	-	-	3	1	-	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 Objective

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:

1. To understand and apply the basics of the calculus of matrices.
2. To solve the fundamental problems of the ordinary differential equations.
3. To apply the advanced techniques to find the solution of the ordinary differential equations.
4. To know the techniques of the numerical analysis.
5. To find the numerical solution of the ODE and PDE.

Syllabus

Unit I: Calculus of Matrices

Systems of linear equations and their solutions. Matrices, determinants, rank and inverse. Linear Transformations. Range space and rank, null space and nullity. Eigenvalues and eigenvectors. Similarity transformations. Diagonalization of Hermitian matrices. Bilinear and quadratic forms.

Unit II: Differential Equation

Ordinary Differential Equations: First order linear and nonlinear ordinary differential equations, exactness and integrating factors. Ordinary linear differential equations of n-th order, solutions of homogeneous and non-homogeneous equations. Operator method. Method of undetermined coefficients and variation of parameters.

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Unit III: Differential Equation

Power series methods for solutions of ordinary differential equations. Legendre equation and Legendre polynomials, Bessel equation and Bessel functions of first and second kind.

Unit– IV: Numerical Analysis

Interpolation and Curve Fitting: Introduction to Interpolation; Calculus of Finite Differences; Finite Difference and Divided Difference Tables; Newton-Gregory Polynomial Form; Lagrange Polynomial Interpolation; Theoretical Errors in Interpolation; Spline Interpolation; Approximation by Least Square Method.

Numerical Differentiation and Integration: Discrete Approximation of Derivatives: Forward, Backward and Central Finite Difference Forms, Numerical Integration, Simple Newton-Cotes Rules: Trapezoidal and Simpson's (1/3) Rules; Weddle's Rule, Gaussian Quadrature Rules: Gauss-Legendre, Gauss-Laguerre, Gauss-Hermite, Gauss-Chebychev.

UNIT – V: Numerical Solution of ODE & PDE

Euler's Method for Numerical Solution of ODE; Modified Euler's Method; Runge-Kutta Method (RK2, RK4), Error estimate; Multistep Methods: Predictor-Corrector method, Adams-Moulton Method; Boundary Value Problems and Shooting Method; finite difference methods, numerical solutions of elliptic, parabolic, and hyperbolic partial differential equations.

Texts:

1. *G. Strang, Linear Algebra And Its Applications, 4th Edition, Brooks/Cole, 2006*
2. *S. L. Ross, Differential Equations, 3rd Edition, Wiley, 1984.*
3. *E. A. Coddington, An Introduction to Ordinary Differential Equations, Prentice Hall, 1995.*
4. *W.E. Boyce and R.C. DiPrima, Elementary Differential Equations and Boundary Value Prob-lems, 7th Edition, Wiley, 2001.*
5. *K. E. Atkinson, Numerical Analysis, John Wiley, Low Price Edition (2004).*
6. *S. D. Conte and C. de Boor, Elementary Numerical Analysis - An Algorithmic Approach, McGraw-Hill,2005.*
7. *B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, Delhi*

References:

1. *E. Kreyszig, Advanced Engineering Mathematics, 9th Edition, Wiley, 2005.*
2. *R. G. Bartle and D. R. Sherbert, Introduction to Real Analysis, 5th Ed, Wiley, 1999.*
3. *J. Stewart, Calculus: Early Transcendentals, 5th Ed, Thomas Learning (Brooks/ Cole), Indian Reprint, 2003.*
4. *J. Stoer and R. Bulirsch, Introduction to Numerical Analysis, 2nd Edition, Texts in Applied Ma-thematics, Vol. 12, Springer Verlag, 2002.*

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5. *J. D. Hoffman, Numerical Methods for Engineers and Scientists, McGraw-Hill, 2001.*
6. *M.K Jain, S.R.K Iyengar and R.K Jain, Numerical methods for scientific and engineering com-putation (Fourth Edition), New Age International (P) Limited, New Delhi, 2004.*
7. *S. C. Chapra, Applied Numerical Methods with MATLAB for Engineers and Scientists, McGraw-Hill 2008.*

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			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTEC104		DIGITAL LOGIC & CIRCUIT DESIGN	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 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.

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.

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Unit-III:

Combinational logic: Arithmetic circuits- Half adder, Full adder, Half subtractor, 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:

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

List of experiments:

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.

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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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			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTCH101		APPLIED CHEMISTRY	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:-

1. To give basic knowledge of polymer science.
2. To understand and apply the knowledge of electro chemistry and its laws.
3. To give basic knowledge of corrosion and control over it.
4. To understand the various sophisticated instrumental techniques.
5. To give basic knowledge of water, lubricants and different properties of water.

Course Outcomes:-

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes. The student will demonstrate capability of

1. Theoretical understanding of various high polymers and their properties.
2. Became aware of the importance of electro chemistry and its laws in the field of technology and dealing with its numerical approach.
3. Understanding metal corrosion and control over it.
4. Implementing instrumental techniques as powerful tool for qualitative and quantitative analysis of compounds.
5. Analyzing boiler feed water for industrial use and drinking water for domestic use.

Syllabus

Unit –I: POLYMERS AND REINFORCED PLASTICS

Classification of polymers-types of polymerization reactions-mechanism of addition polymerization free radical, ionic and Ziegler-Natta-effect of structure on the properties of polymers - strength, plastic deformation, elasticity and crystal lenity -Preparation and properties of

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important resins: Polyethylene, PVC, PMMA, Polyester, Teflon, Bakelite and Epoxy resins compounding of plastics- molding methods-injection, extrusion, compression.

Unit-II: ELECTROCHEMISTRY

Arrhenius theory of electrolytic dissociation, Transport number, Kohlrausch's law, Solubility product, Redox reaction, Electrochemical and concentration cells.

CORROSION AND ITS CONTROL: Corrosion: Basic concepts - mechanism of chemical, electrochemical corrosion - Pilling Bedworth rule – Types of Electrochemical corrosion - galvanic corrosion - differential aeration corrosion - pitting corrosion - stress corrosion – Measurement of corrosion (wt. loss method only) - factors influencing corrosion. Corrosion control: Cathodic protection sacrificial anodic method – corrosion inhibitors. Protective coatings: surface preparation for metallic coatings - electro plating (copper plating) and electroless plating (Nickel plating) - chemical conversion coatings - anodizing, phosphating & chromate coating.

Unit-III: BASIC INSTRUMENTAL TECHNIQUES

Basic principles, instrumentation and applications of potentiometry, UV - visible spectroscopy, infrared spectroscopy, atomic absorption spectroscopy and flame photometry. ENGINEERING MATERIALS: Cement, Refractories etc.

Unit-IV: WATER TREATMENT

Water quality parameters: Physical, Chemical & Biological significance - Hardness of water - estimation of hardness (EDTA method) - Dissolved oxygen – determination (Winkler's method), Alkalinity - determination - disadvantages of using hard water in boilers: Scale, sludge formation - disadvantages - prevention - treatment: Internal conditioning - phosphate, carbon and carbonate conditioning methods - External: Zeolite, ion exchange,Lime Soda methods & Numericals- desalination - reverse osmosis and electrodialysis - domestic water treatment.

Surface Tension: Introduction; Origin of Surface Tension; Surface energy; Laplace & Young-Laplace Equation, Capillarity; Contact Angle; Measurement of Surface Tension by Capillary rise method; Variation of Surface Tension of a liquid with Temperature and Concentration.

Lubricants: Mechanism of lubrication, Classification of lubricants, Properties & testing of lubricating oil. Definition of viscosity of a liquid; Determination of Viscosity; Shear Viscosity; Intrinsic Viscosity; Molecular weight from Viscosity measurement & Numerical problems based on viscosity index.

Unit-V: METAL IN INDUSTRY

Structure of coordination compounds corresponding to coordination number up to 6, Types of ligands, Isomerism [geometrical, optical, ionization, linkage and coordination], Theories of bonding in coordination compounds- crystal field theory, Valence bond theory, Chelation.

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References:

1. *Applied Chemistry – Theory and Practice, O.P. Viramani, A.K. Narula, New Age Pub.*
2. *Polymer Science – Ghosh, Tata McGraw Hill.*
3. *Chemistry for Environmental Engineering – Sawyer, McCarty and Parkin –McGraw Hill, International.*
4. *Basic Lubrication theory – Alistair Cameron*
5. *Engineering chemistry- Dr. Jyoti Mitna*
6. *Engineering chemistry- Dr. Sunita Ratan*
7. *Applied Chemistry – S.M. Khopkar*
8. *Polymer Science- V. R. Gowawriker*
9. *Introduction of polymer science- G.S. Mishra*

List of Experiments:

1. To estimate the strength of the given unknown solution of Mohr's salt (Ferrous ammonium sulphate (FeSO4(NH4)2SO4.6H2O) using KMnO4 solution as an intermediate.
2. Estimation of hardness by EDTA method.
3. Conductometric titration - determination of strength of an acid.
4. Estimation of iron by potentiometry.
5. Determination of molecular weight of polymer by viscosity average method.
6. Determination of Na / K in water sample by Flame photometry (Demonstration).
7. Determination of total alkalinity and acidity of a water sample.
8. Estimation of calcium ions present in tap water. (TDS).
9. To determine the viscosity of a given liquid (30% sugar solution) at room temperature using Ostwald's viscometer.
10. Flash point of lubricating oil by Pensky Martins apparatus.
11. To determine the viscosity index by Red wood Viscometer 1 & 2.

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			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTIT204		DATA STRUCTURES	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:-

1. Be familiar with basic techniques of algorithm analysis
2. Master the implementation of linked data structures such as linked lists and binary trees
3. Be familiar with advanced data structures such as balanced search trees, hash tables, priority queues and the disjoint set union/find data structure
4. Be familiar with several sub-quadratic sorting algorithms including quicksort, mergesort and Heap sort

Course Outcomes:-

1. Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms.
2. Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs.
3. Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs.
4. Demonstrate different methods for traversing trees.
5. Compare alternative implementations of data structures with respect to performance.
6. Compare and contrast the benefits of dynamic and static data structures implementations.
7. Describe the concept of recursion, give examples of its use, describe how it can be implemented using a stack.

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Syllabus

Unit-I

Introduction: Basic Terminology, Data types and its classification, Algorithm complexity notations like big Oh,D,D. Array Definition, Representation and Analysis of Arrays, Single and Multidimensional Arrays, Address calculation, Array as Parameters, Ordered List and operations, Sparse Matrices, Storage pools, Garbage collection. Recursion-definition and processes, simulating recursion, Backtracking, Recursive algorithms, Tail recursion, Removal of recursion. Tower of Hanoi Problem.

Unit-II

Stack, Array Implementation of stack, Linked Representation of Stack, Application of stack: Conversion of Infix to Prefix and Postfix Expressions and Expression evaluation, Queue, Array and linked implementation of queues, Circular queues, D-queues and Priority Queues. Linked list, Implementation of Singly Linked List, Two-way Header List, Doubly linked list, Linked List in Array. Generalized linked list, Application: Garbage collection and compaction, Polynomial Arithmetic.

Unit-III

Trees: Basic terminology, Binary Trees, , algebraic Expressions, Complete Binary Tree, Extended Binary Trees, Array and Linked Representation of Binary trees, Traversing Binary trees, Threaded Binary trees, Binary Search Tree (BsT), AVL Trees, B-trees. Application: Algebraic Expression, Huffman coding Algorithm.

Unit-IV

Internal and External sorting ,Insertion Sort, Bubble Sort, selection sort Quick Sort, Merge Sort, Heap Sort, Radix sort, Searching & Hashing: Sequential search, binary search, Hash Table, Hash Functions, Collision Resolution Strategies, Hash Table Implementation. Symbol Table, Static tree table, Dynamic Tree table.

Unit-V

Graphs: Introduction, Sequential Representations of Graphs, Adjacency Matrices, Traversal, Connected Component and Spanning Trees, Minimum Cost Spanning Trees.

Reference:

1. *R. Kruse et al, "Data Structures and Program Design in C", Pearson Education Asia, Delhi-2002*

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2. *ISRD Group; Data structures using C; TMH*
3. *Lipschutz; Data structure (Schaum); TMH*
4. *Horowitz and Sahani, "Fundamentals of data Structures", Galgotia Publication Pvt. Ltd., N Delhi. A. M. Tenenbaum, "Data Structures using C & C++", Prentice-Hall of India Pvt. Ltd., New Delhi.*
5. *Data Structures Trembley and Sorenson, TMH Publications*
6. *Pai; Data structure and algorithm; TMH*
7. *Introduction to Algorithm- Corman, AWL*

List of Experiments.

1. Implement singly and doubly linked lists.
2. Represent a polynomial as a linked list and write functions for polynomial addition.
3. Implement stack and use it to convert infix to postfix expression
4. Implement array-based circular queue and use it to simulate a producer- consumer problem.
5. Implement an expression tree. Produce its pre-order, in-order, and post-order traversals.
6. Implement binary search tree.
7. Implement priority queue using heaps
8. Implement hashing techniques.
9. Implement Dijkstra's algorithm using priority queues.
10. Implement a backtracking algorithm for Knapsack problem
11. Implement the following searching and sorting algorithm Bubble Sort, insertion sort, selection sort, heap sort, quick sort merge sort, bin sort, binary search, Fibonacci search.

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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTIT205		FUNDAMENTALS OF COMPUTER SYSTEM ORGANIZATIONS	60	20	20	-	50	3	-	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:-

1. To conceptualize the basics of organizational and architectural issues of a digital computer
2. To analyze performance issues in processor and memory design of a digital computer
3. To understand various data transfer techniques in digital computer
4. To analyze processor performance improvement using instruction level parallelism

Course Outcomes:-

1. Ability to understand basic structure of computer.
2. Ability to perform computer arithmetic operations.
3. Ability to understand control unit operations.
4. Ability to design memory organization that uses banks for different word size operations.
5. Ability to understand the concept of cache mapping techniques
6. Ability to understand the concept of I/O organization.
7. Ability to conceptualize instruction level parallelism

Syllabus:

Unit-I:

Computer Basics and CPU : Von Newman model, various subsystems, CPU, Memory, I/O, System Bus, CPU and Memory registers, Program Counter, Accumulator, Instruction register, Micro operations, Register Transfer Language, Instruction Fetch, decode and execution, data

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movement and manipulation, Instruction formats and addressing modes of basic computer. 8085 microprocessor organization.

Unit-II

Control Unit Organization : Hardwired control unit, Micro and nano 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 and arithmetic units, design of arithmetic unit.

Unit-III

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, 8085 I/O structure, 8085 instruction set and basic programming. Data Transfer – Serial / parallel, synchronous/asynchronous, simplex,/half duplex and full duplex.

Unit-IV

Memory organization: Memory Maps, Memory Hierarchy, Cache Memory - Organization and mappings. Associative Memory, Virtual Memory, Memory Management Hardware.

Unit-V

Multiprocessors: Pipeline and Vector processing, Instruction and arithmetic pipelines, Vector and array processors, Interconnection structure and inter-processor communication.

References:

1. *Morris Mano: Computer System Architecture, PHI.*
2. *Gaonkar: Microprocessor Architecture, Programming, Applications with 8085; Penram Int.*
3. *William Stallings: Computer Organization and Architecture, PHI*
4. *Carter; Computer Architecture (Schaum); TMH*
5. *Carl Hamacher: Computer Organization, TMH*
6. *Tanenbaum: Structured Computer Organization, Pearson Education*

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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTIT206		COMPUTER HARDWARE LAB	-	-	-	-	50	-	-	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:-

1. Introduce students to the installation, configuration, optimization and upgrading of computer systems;
2. Introduce students to troubleshooting and maintaining the computer system; and
3. Provide students with opportunities to develop basic techniques with respect the hardware of a computer system.

Course Outcomes:-

1. Explain how a PC works, and understand the relationship between hardware and software;
2. Classify and explain the function of different computer hardware components;
3. Understand purpose and functions of an operating system (OS);
4. Understand the purpose and functions of the computer peripherals;
5. Understand diagnostic procedures and troubleshooting techniques to personal computers, portable devices, operating systems and computer peripherals.

Syllabus

Unit-I :Microprocessor System

Introduction of System overview, Introduction to Processors, Memory Interfacing, Interfacing I/O Devices, Interfacing Data Converters, Display Interface, Serial I/O and Data Communication, Higher level Processors.

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Unit-II :Introduction to PC Architecture

Study of PC-AT/ATX System,Pentium , Core, Core 2 Cord, Core 2 Duo, I3, I5, I7 Processor Basics of Proc essor and CPU Block Diagram of Computer and Computer Generation Motherboards, Chipset and Controllers, BIOS and the Boot Process, Computer Memory.

Unit-III:Internal Components

IDE and SATA Devices : Hard Disk Drive and CD/DVDs Drives,SCSI Devices,Floppy Disk, Zip Drive, Backup Drive,Expansion Cards-LANCard, IDECard , VGA and SVGACards, SoundCard, Interface Cards, I/O cards, Video Cards, USB Card, Fire-Wire Cards,Internal Ports,Cables and Connector Types.

Unit-IV:External Components

Monitors:-CRT,LCDand LEDDisplays. Printers:-Dot-Matrix Printer, Inkjet Printer, Laser Printer. Scanner:-Photo Scanner, Documents Scanner, Bar Cord Scanner.

Keyboards, Mouse, External Modem, Ports and Connectors, Batteries, Powersupply, Pen Drives,SCSI interface devices,Laptop Computers, Digital Advance storage technology.

Unit-V:Network Components

Introduction of Network Cable like UTP, STP, Fiber Optics, Hub, Unmanageable Switch, Manageable Switch, Router, Modem, Wi-Fi, Access Point, PCI Wireless Card, USB Wireless Device, Print Server, USB Network Sharer, Backup Device, Server Hardware etc.

References:

1. *Computer today -By Donald (Mc Graw Hill)*
2. *A+ guide to hardware - By Jean Andrews*
3. *How computers really works - By Milinds.pandit.*
4. *Servicing personal computers - By MichaelHTooley.*

List of Experiments:

1. Case Study of Motherboard.
2. Introduction to Expansion Cards and Slots.
3. Case Study SMPS.
4. Explain in detail Secondary Storage and Devices.
5. Case Study of Assembling A.
6. Introduction to Digital Computer System.
7. Explain in detail Primary and Secondary Memory.
8. Case Study of Central Processing Unit (CPU).
9. Introduction to Different -different Cables.
10. Case Study of Network Hardware And File System.

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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
BTIT207		PROGRAMMING SKILLS-II (JAVA0	-	-	-	30	20	-	-	4	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.

Course Objectives:-

1. Understand fundamentals of programming such as variables, conditional and iterative execution using Java.
2. Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
3. Be able to use the Object Oriented concepts using java to create, debug and run general purpose programs.

Course Outcomes:-

1. To prepare object-oriented design for small/medium scale problems for Java.
2. To explain class structures as fundamental, modular building blocks
3. To understand the role of inheritance, polymorphism, dynamic binding & constructor.
4. To understand the concept of Exception Handling .
5. To write small/medium scale Java programs with simple graphical user interface.
6. To understand the concept of Code Reuseability & Threading.

Syllabus

Unit-I

JDK Installation and setting the path, JDK Tool(Java Compiler, Java Virtual Machine, Debugger, Applet viewer, Javadoc, Jar),Compile and run java program, Compiler options and JVM options, Data type, Operators , Control Statement (if, if...else, switch ...case, while, for, do...while, break, continue, labeled break, labeled continue) , Arrays ,Memory allocation and garbage collection, Classes and object scope and life time ,Access specifies, Constructor and finalize method , this

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keyword, instance block, static block, static data member, static method, Inheritance, method overriding, dynamic method dispatch, constructors in Inheritance ,super keyword, abstract method and abstract class, final method ,final data member, final class, defining an Interface, Implementing and applying interface, extending Interface.

Unit -II

Creating package , using package. Try, catch, throw, throws, finally, Object Class, String Class, String Buffer class, Math Class, Wrapper Classes, String Tokenizer Class, Collection, Set, List Map, Array List, Sorted Set, Iterator, File Class, Thread class and its method, Creating Thread ,lifecycle of a thread , Runnable Interface, thread synchronization, wait, notify, Thread Group class.

Unit -III

Multithreading and Exception Handling: Overview of simple threads, Basic idea of multithreaded programming, Thread synchronization: Locks, synchronized methods, synchronized block, Thread scheduling, Producer -consumer relationship, Daemon thread, Basic idea of exception handling, stack based execution and exception propagation, Exception types:, Exception Handling: Try, Catch, Finally, Throw statement, Assertions

Unit -IV

Input/Output -: Exploring Java I/O., Directories, stream classes The Byte stream : Input stream, output stream, file input stream, file output stream, print stream, Random access file, the character streams, Buffered reader, buffered writer, print writer, serialization.

JDBC : JDBC-ODBC bridge; The connectivity model; The driver manager; Navigating the result set object contents; java.sql Package; The JDBC exception classes; Connecting to Remote database.

Unit -V

Java Networking : exploring java.net package Networking Basics : Socket, Client server, reserved Sockets, proxy servers, Internet addressing, TCP sockets, UDP sockets.

RMI: Client/Server architecture, RMI registry services; Steps of creating RMI Application and an example.

References:

1. *JAVA – Complete Reference By Herbert Shield, 7th Edition.*
2. *Deitel & Deitel, ''JAVA, How to Program"; PHI, Pearson.*
3. *E. Balaguruswamy, "Programming In Java"; TMH Publications*

4. *The Complete Reference: Herbert Schildt, TMH*
5. *Peter Norton, "Peter Norton Guide To Java Programming", Techmedia.*
6. *Merlin Hughes, et al; Java Network Programming , Manning Publications/Prentice Hall*
7. *Cay Horstmann, Big JAVA, Wiely India.*

List of Experiments*:*

1. Write a program to show Scope of Variables.
2. Write a program to show Concept of CLASS in JAVA.
3. Write a program to show Type Casting in JAVA.
4. Write a program to show How Exception Handling is in JAVA .
5. Write a Program to show Inheritance.
6. Write a program to show Polymorphism.
7. Write a program to show Access Specifiers (Public, Private, Protected) in JAVA .
8. Write a program to show use and Advantages of CONTRUCTOR.
9. Write a program to show Interfacing between two classes.
10. Write a program to Add a Class to a Package.
11. Write a program to show Life Cycle of a Thread .
12. Write a program to demonstrate AWT.
13. Write a program to Hide a Class.
14. Develop a multi-threaded GUI application of your choice.