Shri Vaishnav Vidyapeeth Vishwavidyalaya
Shri Vaishnav Institute Of Information Technology
B.Tech. (CSE- Artificial Intelligence and Machine Learning-Microsoft)
Choice Based Credit System (CBCS)-2023-27
SEMESTER-III

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*				
BTCS301N	DCC	Discrete Structures	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 Educational Objectives (CEOs):

The student will have ability to:

1. Provide the fundamentals of formal techniques for solve the problems in computational domain and algorithm development.
2. Apply appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
3. Formulate and evaluate possible solutions to problems and select and defend the chosen solutions.
4. Construct graphs and charts, interpret them, and draw appropriate conclusions.

Course Outcomes (COs):

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

1. Understand the notion of mathematical thinking, mathematical proofs, and algorithmic thinking, and be able to apply them in problem solving.
2. Define sets and perform operations and algebra on sets.
3. Demonstrate an understanding of relations and functions and be able to determine their properties.
4. Analyse logical propositions via truth tables.
5. Write an argument using logical notation and determine if the argument is or is not valid.
6. Understand some basic properties of graphs and related discrete structures and be able to relate these to practical examples.
7. Model problems in Computer Science using graphs and trees.
8. Be able to use effectively algebraic techniques to analyse basic discrete structures and algorithms.
9. Draw hasse diagram and identify lattice.
10. Understand generating functions and recurrence relation.

Syllabus:

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UNIT I **10HRS**

Set Theory

Definition of Sets, Venn Diagrams, complements, Cartesian products, power sets, counting principle, cardinality and countability (Countable and Uncountable sets), pigeonhole principle. Relation: Definition, types of relation, domain and range of a relation, pictorial representation of relation, properties of relation, partial ordering relation. Function: Definition and types of function, composition of functions, recursively defined functions.

UNIT II **9 HRS**

Propositional logic

Proposition logic, basic logic, logical connectives, truth tables, tautologies, contradiction, normal forms (conjunctive and disjunctive), modus ponens and modus tollens, validity, predicate logic, universal and existential quantification. Notion of proof: proof by implication, converse, inverse, contrapositive, negation, and contradiction, proof by using truth table.

UNIT III **9 HRS**

Graph Theory

Terminology Graph Representation Graph isomorphism; Connectedness; Various graph properties; Euler & Hamiltonian graph; shortest paths algorithms. Trees: Terminology; Tree traversals; prefix codes; Spanning trees; Minimum spanning trees.

UNIT IV **8 HRS**

Algebraic Structure

Binary composition and its properties definition of algebraic structure; Groupoid, Semi group, Monoid Groups, Abelian Group, properties of groups, Permutation Groups, Subgroup, Cyclic Group, Rings and Fields (definition and standard results).

UNIT V **9 HRS**

POSET, Hasse Diagram and Lattices

Introduction, ordered set, well ordered set, Hasse diagram of partially, Lattices, properties of Lattices, bounded and complemented lattices. Generating functions, Solution by method of generating functions. Recurrence Relation and Generating Function: Introduction to Recurrence Relation, Linear recurrence relations with constant coefficients, Homogeneous solutions, Particular solutions, Total solutions.

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Textbooks:

1. C.L. Liu, D. P. Mohapatra "Elements of Discrete Mathematics" Tata McGraw-Hill Edition, 4th Edition, 2017

References:

1. Trembley, J.P &Manohar; "Discrete Mathematical Structure with Application CS", McGraw Hill, 1st Edition, 2017
2. Biswal," Discrete Mathematics & Graph Theory", PHI, 4thEdition, 2015.
3. Kenneth H. Rosen, "Discrete Mathematics and its applications", McGraw Hill, 8th Edition, 2021.
4. Seymour Lipschutz, M. Lipson, "Discrete Mathematics" Tata McGraw Hill, 4thEdition, 2021.

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BTCS306M	DCC	Fundamentals of Data Structures	60	20	20	30	20	3	0	2	4

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*__Teacher Assessment__ shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. To understand efficient storage mechanisms of data for easy access.
2. To design and implement various basic and advanced data structures.
3. To introduce various techniques for representation of the data in the real world.
4. To develop applications using data structures.
5. To understand the concept of protection and management of data.

Course Outcomes (COs):

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

The students will be able to

1.Get a good understanding of applications of Data Structures.
2.Develop application using data structures.
3.Handle operations like searching, insertion, deletion, traversing mechanism etc. On various data structures.
4.Decide the appropriate data type and data structure for a given problem.
5. Select the best algorithm to solve a problem by considering various problem characteristics, such as the data size, the type of operations, etc.

Syllabus:

UNIT I **10HRS**

Introduction: Overview of Data structures, Types of data structures, Primitive and Non Primitive data structures and Operations, Introduction to Algorithms & complexity notations. Characteristic of Array, One Dimensional Array, Operation with Array, Two Dimensional Arrays, Three or Multi-Dimensional Arrays, Sparse matrix, Drawbacks of linear arrays. Strings, Array of Structures, Pointer and one-dimensional Arrays, Pointers and Two Dimensional Arrays, Pointers and Strings, Pointer, and Structure.

UNIT II **9 HRS**

Linked List: Linked List as an ADT, Linked List Vs. Arrays, Dynamic Memory Allocation & De-allocation for a Linked List, Types of Linked List: Circular & Doubly Linked List. Linked List operations: All possible insertions and deletion operations on all types of Linked list Reverse a Single Linked List; Divide a singly linked list into two equal halves, Application of Linked List.

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UNIT III **8HRS**

Stack: The Stack as an ADT, Stack operation, Array Representation of Stack, Link Representation of Stack, Application of stack – Recursion, Polish Notation. Types of Recursion, problem based on Recursion: Tower of Hanoi

The Queue: The Queue as an ADT, Queue operation, Array Representation of Queue, Linked Representation of Queue, Types of Queues: Circular Queue & Dequeue, Introduction of Priority Queue, Application of Queues.

UNIT IV **7HRS**

Tree: Definitions and Concepts of Binary trees, Types of Binary Tree, Representation of Binary tree: Array & Linked List. General tree, forest, Expression Tree. Forest and general tree to binary tree conversion. Binary Search Tree Creation, Operations on Binary Search Trees: insertion, deletion & search an element, Traversals on Binary SEARCH TREE and algorithms. Height balanced Tree: AVL, B-Tree, 2-3 Tree, B+Tree: Creation, Insertion & Deletion.

Graph: Definitions and Concepts Graph Representations: Adjacency MATRIX, Incidence matrix, Graph TRAVERSAL (DFS & BFS), Spanning Tree and Minimum Cost Spanning Tree: Prim‟s & Kruskal‟s Algorithm.

UNIT V **8HRS**

Sortings: Sorting Concept and types of Sorting, Stable & Unstable sorting. Concept of Insertion Sort, Selection sort, Bubble sort, Quick Sort, Merge Sort, Heap & Heap Sort, Shell Sort & Radix sort. Algorithms and performance of Insertion, selection, bubble, Quick sort & Merge sort

Textbooks:

1. Ashok N. Kamthane, “Introduction to Data structures”, 2nd Edition, Pearson Education India,2011.

References:

1.Rajesh K. Shukla, Data Structures Using C & C++, Wiley-India 2016.
2.ISRD Group, Data Structures Using C, Tata McGraw-Hill 2015.
3.E. Balagurusamy, Data Structure Using C”, Tata McGraw-Hill 2017.

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***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

4. Prof. P.S. Deshpande, Prof. O.G. Kakde, C & Data Structures, Charles River Media 2015.
5.Gav Pai, Data Structures, Tata McGraw-Hill, 2015.
6. Tremblay & Sorenson, "Introduction to Data- Structure with applications", 8th Edition, Tata McGrawHill,2011.
7. Bhagat Singh & Thomas Naps, "Introduction to Data structure", 2nd Edition, Tata McGraw Hill 2009.
8. Robert Kruse, "Data Structures and Program Design",2nd Edition, PHI,1997.
9. Lipschutz Seymour," Data structures with C" ,1st Edition, Mc- GrawHill,2017.

Suggested List of Practical:

1. To develop a program to find an average of an array using AVG function.
2. To implement a program that can insert, delete, and edit an element in array.
3. To implement an algorithm for insert and delete operations of circular queue and implement the same array.
4. Write a menu driven program to implement the push, pop, and display option of the stack with the help of static memory allocation.
5. Write a menu driven program to implement the push, pop, and display option of the stack with the help of dynamic memory allocation.
6. Write a menu driven program to implementing the various operations on a linear queue with the help of static memory allocation.
7. Write a menu driven program to implementing the various operations on a linear queue with the help of dynamic memory allocation.
8. Write a menu driven program to implement various operations on a linear linked list.
9. Write a menu driven program to implement various operations on a circular linked list
10.Write a program for implementation of Bubble sort
11.Write a program for Insertion sort
12.Write a program for Merge Sort
13.Write a program to implement Heap sort
14.Write a program to implement Quick sort
15.Write a program to Construct a Binary Search Tree and perform deletion, inorder traversal on it

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BTCS306M	DCC	Fundamentals of Data Structures	60	20	20	30	20	3	0	2	4

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16. Write a program to develop an algorithm for binary tree operations and implement the same.
17. Write a program to design an algorithm for sequential search, implement and test it.
18. Write a program to develop an algorithm for binary search and perform the same.

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

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*__Teacher Assessment__ shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

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 (COs):

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

The students will be able to:

1. Understand the architecture of a modern computer.
2. Explain the functional behaviour 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 **10HRS**

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 **9HRS**

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 **8HRS**

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.

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BTCS103M	DCC	**Computer System Organization**	**60**	**20**	**20**	**30**	**20**	**3**	**0**	**2**	**4**

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Unit-IV **7HRS**

Memory organization: Memory Hierarchy, Cache Memory - Organization and types of cache mappings, Virtual memory, Memory Management Hardware.

Unit-V **8HRS**

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.

References:

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.
5. William Stallings, Computer Organization and Architecture, Seventh Edition, PHI, 2009.
6. Andrew S. Tanenbaum, Structured Computer Organization, Sixth Edition, Pearson Education, 2016.
7. John P. Hayes, Computer Architecture and Organizations, Third edition, Mc-Graw Hills, New Delhi, 2017.

Suggested List of Experiments:

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.

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BTCS103M	DCC	**Computer System Organization**	**60**	**20**	**20**	**30**	**20**	**3**	**0**	**2**	**4**

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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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BTIT201M	**DCC**	**Data Communication**	**60**	**20**	**20**	**0**	**0**	**3**	0	**0**	3

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Course Educational Objectives (CEOs):

The student will have ability to:
1. To understand the concepts of data communications.
2. To be familiar with the Transmission media and Tools.
3. To study the functions of OSI layers.
4. To learn about IEEE standards in computer networking.
5. To get familiarized with different protocols and network components.

Course Outcomes (COs):

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

The students will be able to:
1. Understand the Process and functions of data communications.
2. Understand Transmission media and Tools.
3. Understand the functions of OSI layers.
4. Understand IEEE standards in computer networking.
5. Understand different protocols and network components.

Syllabus

UNIT–I 10HRS

Introduction: Data Communication Components, Types of Connections, Transmission Modes, Network Devices, Topologies, Protocols and Standards, OSI Model, Transmission Media, Bandwidth, Bit Rate, Bit Length, Baseband and Broadband Transmission, Attenuation, Distortion, Noise, Throughout, Delay and Jitter.

UNIT–II 9HRS

Data Encoding: Unipolar, Polar, Bipolar, Line and Block Codes. Multiplexing: Introduction and History, FDM, TDM, WDM, Synchronous and Statistical TDM. Synchronous and Asynchronous transmission, Serial and Parallel Transmission.

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BTIT201M	**DCC**	**Data Communication**	**60**	**20**	**20**	**0**	**0**	**3**	0	**0**	3

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UNIT–III **8HRS**

Error Detection & Correction: Correction, Introduction–Block Coding–Hamming Distance, CRC, Flow Control and Error Control, Stop and Wait, Error Detection and Error Go Back– N ARQ, Selective Repeat ARQ, Sliding Window, Piggybacking, Random Access, CSMA/CD, CDMA/CA

UNIT–IV **7HRS**

Network Switching Techniques: Circuit, Message, Packet, and Hybrid Switching Techniques.X.25, ISDN. Logical Addressing, Ipv4, Ipv6, Address Mapping, ARP, RARP, BOOTP and DHCP, User Datagram Protocol, Transmission Control Protocol, SCTP.

UNIT–V **8HRS**

Application Layer Protocols: Domain Name Service Protocol, File Transfer Protocol, TELNET, WWW and Hyper Text Transfer Protocol, Simple Network Management Protocol, Simple Mail Transfer Protocol, Post Office Protocol v3.

TEXTBOOKS:

1. Behrouz A. Forouzan, “Data communication and Networking”, Fourth Edition, Tata McGraw Hill, 2011.

REFERENCES:

1. Larry L. Peterson, Peter S. Davie, “Computer Networks”, Fifth Edition, Elsevier, 2012.
2. William Stallings, “Data and Computer Communication”, Eighth Edition, Pearson Education,2007.
3. James F. Kurose, Keith W. Ross, “Computer Networking: A Top–Down Approach Featuring the Internet”, Pearson Education, 2005.

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BTAIML303N	DSC	Essentials of ML	60	20	20	30	20	3	0	2	**4**

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***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Educational Objectives (CEOs):

1. To understand the basic theory underlying machine learning.
2. To be able to formulate machine learning problems corresponding to different applications.
3. To understand a range of machine learning algorithms along with their strengths and weaknesses.
4. To be able to apply machine learning algorithms to solve problems of moderate complexity.
5. To apply the algorithms to a real-world problem, optimize the models learned and report on the expected accuracy that can be achieved by applying the models.

Course Outcome (COs):

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

1. Understand the theory of Machine Learning
2. Understand and Develop model on Regression Algorithm
3. Understand and Develop model on Classification Algorithm
4. Understand and Develop model on Clustering Algorithm

Syllabus:

UNIT I **9HRS**

Machine Learning: Introduction, Model of Learning, Types of Learning, Types of ML: Regression and Classification, Supervised and Unsupervised learning, Terminology, Process in Machine Learning, Exploratory Data Analysis, Real time use of Machine Learning.

UNIT II **8HRS**
Regression: Simple Linear Regression, Linear Equation, slope, intercept, Multi-Regression, Polynomial regression, Error: MAE, MSE, RMSE, R2 Score.

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BTAIML303N	DSC	Essentials of ML	60	20	20	30	20	3	0	2	**4**

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UNIT III **9HRS**

Classification: Classification, Logistic Regression, Sigmoid function, Confusion matrix, accuracy score, Precision, Recall. Data Prepossessing: Label Encoder, Standard Scalar. k-Nearest Neighbour's, Support Vector Machine, Decision Tree, Hyper Parameter Tuning.

UNIT IV **8HRS**

Clustering: Unsupervised Learning, Clustering, Type of Clustering: Hierarchical Clustering, Density-Based Clustering, K-MEAN Clustering, Choosing number of clusters, Elbow Method.

UNIT V **9HRS**

Recommender System, what is Recommender System? Why the Recommendation system? What can be Recommended? Types of Recommender System.

TEXTBOOKS:

1. The Hundred-Page Machine Learning Book by Andriy Burkov

REFERENCES:

1. https://learn.microsoft.com/en-us/training/modules/introduction-to-machine-learning/
2. https://learn.microsoft.com/en-us/training/modules/introduction-to-classical-machine-learning/
3. https://learn.microsoft.com/en-us/training/modules/introduction-to-data-for-machine-learning/
4. https://learn.microsoft.com/en-us/training/modules/explore-analyze-data-with-python/
5. https://learn.microsoft.com/en-us/training/modules/understand-regression-machine-learning/
6. Machine Learning for Absolute Beginners by Oliver Theobald
7. Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow by Geron Aurelien

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B.Tech. (CSE- Artificial Intelligence and Machine Learning-Microsoft)
Choice Based Credit System (CBCS)-2023-27
SEMESTER-III

BTCS306M	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*				
BTAIML303N	DSC	Essentials of ML	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.

SUGGESTED LIST OF EXPERIEMNTS:

1.Medical data classification model using Support Vector Machines
2. Emission prediction in automobiles using Regression
3. Customer retention prediction at a telecom company
4. Determining credit worthiness of customers using Decision Trees
5. Customer segmentation using K-means clustering
6. Grouping news articles.
7. Content Based Recommender System figure out what are user's favourite items (music, video, movie etc) and then recommend similar items.

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			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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Course Educational Objectives (CEOs):

The student will have ability to:

1. Understand Java Environment for application development.
2. Understand Programing using Object Oriented Technology.
3. Develop computer program to solve specific problems with high performance.
4. Create debug and run java standalone applications.
5. Understand the concept of Exception handling and Multithreading.

Course Outcomes (COs):

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

The students will be able to

1. Design new applications using object-oriented methodologies.
2. Explore various system libraries.
3. Develop reusable programs using the concepts of inheritance, polymorphism, interfaces, and packages.
4. Apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.
5. Design Data base connectivity program for simple problems.

Syllabus:

UNIT I **12HRS**

Introduction to Java: Java's magic, The Byte code, Java Development Kit (JDK), Java Buzzwords, Object oriented programming, Simple Java programs, Data types, variables and arrays, Operators, Control Statements.

UNIT II 8**HRS**

Classes, Inheritance, Packages, and Interfaces: Classes: Classes fundamentals, Declaring objects, Constructors, this keyword, garbage collection. Inheritance: inheritance basics, using super, creating multi-level hierarchy, method overriding. Packages, Access Protection, Importing Packages, Interfaces.

UNIT III **7HRS**

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BTCS306M	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*				
BTIT307N	SEC	Introduction to Core Java	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.

Exceptions handling and Multi-threading: Exception, Exceptions and Errors, Types of Exception, Control Flow in Exceptions, Use of Try, Catch, Finally, Throw, Throws in Exception Handling, In-Built and User Defined Exceptions, Checked and Un Checked Exceptions.

UNIT IV **8HRS**
Understanding Threads, Needs of Multi-Threaded Programming, Thread Life Cycle, Thread Priorities, Synchronizing Threads.

UNIT V **8HRS**
The Java Library: String Handling, Exploring Java. Lang, Java.Util – The Collection Framework, Exploring Java.IO.

Textbooks:
1. E. Balagurusamy, “Programming with java A Primer”, Fourth Edition, Tata McGraw Hill, 2009

References:
1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI.
2. Introduction to Java programming, By Y.DanielLiang,Pearson Publication.
3. SouravSahay, Object Oriented Programming with C++ , Oxford University Press,2006
4. Herbert Schildt, “The Complete Reference Java”, Ninth Edition, McGraw Hill, 2014
5. Bert Bates, Kathy Sierra, “Head First Java”, 2nd Edition, O’ Reilly, 2005

List of Practical:
1. Write a program to show the concept of Class in Java?
2. Write a program showing Type Casting.
3. Write a program showing Different type of inheritance.
4. Write a program showing Different types of Polymorphism.
5. Write a program showing Encapsulation.
6. Write a program showing Abstraction.
7. Write a program showing interface.
8. Write a program showing abstract class.
9. Write a program showing inner class.
10. Write a Multithreaded program.
11. Write a program showing Checked and Unchecked Exception.