



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Shri Vaishnav Institute of Computer Applications

Name of the Program: BCA in Big Data Analytics in association with IBM

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	University Exam	Teachers Assessment*				
HU201	II	Foundation English II	60	20	20	0	20	3	0	2	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

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

.Course Educational Objectives (CEOs): The students will be able to:

- Participation in seminars, group discussions, paper presentation and general personal interactions at the professional level.
- Have adequate mastery over communicative english, reading and writing skills, secondarily listening and speaking skills.

Course Outcomes (COs): The students should be able to:

- Improve their language skills, oral communication skills, group discussion skills, personal skills and confidence level.
- express his /her ideas and thoughts in speech or writing,
- Bridge the language gap vital to their success.
- Communicate effectively.

COURSECONTENTS:

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UNIT I

Communication: Objectives of Communication, Formal and Informal Channels of Communication, Advantages and Disadvantages, Extrapersonal communication, Interpersonal communication, Intrapersonal communication, Principles of communication.

UNIT II

Developing Reading Skills: Reading Comprehension, Process, Active & Passive reading, Reading speed Strategies, Benefits of effective reading, SQ3R Reading technique.

UNIT III

Vocabulary Building: Using Dictionaries and Thesaurus, Synonyms, Antonyms, Homophones, One Word Substitution, Affixation: Prefixes & Suffixes, Derivation from root words, Jargon, Scientific Jargon, Word Formation.

UNIT IV

Developing Writing Skills: Planning, Drafting and Editing, Developing Logical Paragraphs, Report Writing: Importance of Report, Characteristics of Good Report, Types of Report, Various Structures of a Report.

UNIT V

Professional Skills: Negotiation Skills, Telephonic Skills, Interview Skills: Team building Skills and Time management

Practical:

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- Listening
- Linguistics and Phonetics
- Telephonic Conversation
- Mock Interviews
- Group discussions
- Extempore
- Debate
- Role Plays

Suggested Readings

- Ashraf Rizvi.(2005).*Effective Technical Communication*. New Delhi:TataMcGrawHill
- Prasad, H. M.(2001) *How to Prepare for Group Discussion and Interview*. New Delhi: Tata McGraw-Hill.
- Pease, Allan. (1998).*Body Language*. Delhi: Sudha Publications.
- OMorgan, Dana (1998).*10 Minute Guide to Job Interviews*. New York: Macmillan.

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Name of Program : BCA + MCA

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BCCA202	COM PULS ORY	Mathematical Foundation of Computer Science - II	60	20	20	0	0	3	1	0	4

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Course Educational Objectives(CEOs):

- To introduce the students with the concepts of Probability and Distributions.

Course Outcomes (Cos):

- After the successful completion of this course students will be able to understand and apply the fundamentals of probability.
- Students will be able to demonstrate the use of distributions.
- Students will be able to apply the hypothesis in test cases.

UNIT – I

Probability: Axioms, Conditional probability, Baye's theorem, Random Variables, Discrete random variables – Binomial, Geometric, Poisson RV.

UNIT – II

Continuous RV – Uniform, Exponential, Gamma & Normal,

UNIT – III

Expectation, Mean and Variance, Jointly distributed RVs, Co-variance, Sums of RVs, Central Limit theorem, Moment Generating functions.

UNIT – IV

Sample Distribution, Inference concerning mean, Statistical Inference – Parameter estimation, Maximum likely-hood estimation

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UNIT – V

Testing of Hypothesis, Curve Fitting-Method of the Least Square, Curvilinear multiple regression

Text and Reference Books:

1. Ross, S: A First course in probability, sixth edition, Pearson Education.
2. Ross Sheldon: Introduction to Probability models, Eighth edition, Elsevier, 2003
3. Trivedi K. S.: Probability & Statistics with Reliability, Queuing and Computer Science Applications, Second edition, Wiley, 2002


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BCCAIB M201	Compulsory	Fundamentals of Java	4	1	4	7	60	20	20	30	20

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***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall exceed 10 Marks)

Course Education Objectives (CEOs):

- To familiarize the students with Object Oriented Methodology.
- Students must be able to understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- Students must have the ability to write a computer program to solve specified problems.
- Students must be able to use the Java SDK environment to create, debug and run simple Java programs.
- Students must learn the concepts of JDBC and concepts of OOPs using Java.

Course Outcomes (COs):

- Understand different programming paradigms, Evolution of programming languages, Programming styles.
- Differentiate and compare structured and object oriented approach. Also understand OO design and analysis concepts.
- Design efficient solutions for real world problems.
- Explain the concept of class and objects with access control to represent real world entities.

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- Demonstrate the behaviour of programs involving the basic programming constructs like control structures, constructors, string handling and garbage collection.
- Use overloading methodology on methods and constructors to develop application programs.
- Demonstrate the user defined exceptions by exception handling keywords (try, catch, throw, throws and finally).
- Describe the backend connectivity process in java program by using JDBC drivers. 14. Develop Java application to interact with database by using relevant software component (JDBC Driver).

Syllabus:

UNIT – I

OOPS OVERVIEW: Introduction to OOPs, Features of OOPs, Advantages of OOPs, Different types of programming approaches.

INTRODUCTION TO JAVA: What is java, History of java, Java features, Introduction to Eclipse IDE, Explanation about java compiler, JVM, JRE, JDK, Bytecode, How to run Eclipse ide.

JAVA COMPONENTS : Constant, variable, token, literal, Identifiers, datatypes, keywords, All types of operators, Command line arguments, Taking user input.

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UNIT - II

CONTROL STRUCTURE: Conditional statements-if, if else, nested if, ladder else if, Unconditional statements- switch case, Looping statements.

CLASS AND OBJECT: What is class and object, Data members and methods, Inner classes and types.

CONSTRUCTORS: What is constructor, Advantages, Types with examples.

UNIT – III

ARRAY: What is array, Array declaration with syntax, Types-1d, 2d and 3d with examples each.

STRING HANDLING: String introduction, String class with methods with examples, String Builder class with methods and examples, StringBuffer class with examples.

INHERITANCE: Introduction, Types with examples, Interface with example, Use of super, Use of abstract with example.

UNIT – IV

POLYMORPHISM: What is polymorphism, Types of polymorphism.

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EXCEPTION HANDLING: What is exception, Types, Predefined exceptions, User-defined exceptions.

MULTI-THREADING: Introduction, Advantages. Multi-threading concept, Lifecycle of Thread, Thread priority, Thread interface, Thread synchronization.

UNIT – V

PACKAGE: What is package, Benefits of using package, Types, Predefined package, User-defined package.

FILE HANDLING: Java I/O, Pre-defined file i/o methods, Stream and types, File classes, File operations with examples.

JDBC: Introduction to java database, what is JDBC, JDBC Connectivity.

Reference Books:

1. E. Balagurusamy, “Programming with Java: A Primer”, TMH.
2. Patrick Naughton and Herbert Schildt, “Java-2: The Complete Reference”, TMH.
3. Horstmann, “Computing Concepts with Java 2 Essentials”, John Wiley.
4. Daniel Liang, “Introduction to Java Programming”, Pearson.
5. Decker and Hirshfield, “Programming Java: A Introduction to Programming Using JAVA”, Vikas Publication.

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BCCAIB M201	Compulsory	Fundamentals of Java	4	1	4	7	60	20	20	30	20

6. N.P. Gopalan and J. Akilandeswari, “Web Technology- A Developer’s Perspective”, PHI.

List of Experiments:

1. Write a Java program that prompts the user for an integer and then prints out all prime numbers up to that Integer.
2. Write a Java program for sorting a given list of names in ascending order.
3. Write a Java program that checks whether a given string is a palindrome or not.

Ex: MADAM is a palindrome.

4. Write a Java Program that reads a line of integers, and then displays each integer, and the sum of all the integers (use String Tokenizer class).
5. Write a Java program that displays the number of characters, lines and words in a text file.
6. Write a Java program that reads a file and displays the file on the screen, with a line number before each line.
7. Write a Java program that illustrates how run time polymorphism is achieved.
8. Write a Java program for creating multiple threads a) Using Thread class. b) Using Runnable interface.
9. Write a java program that illustrates the following a) Handling predefined exceptions. b) Handling user defined exceptions.

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BCCA204	Compulsory	Data Structure using C	3	1	0	4	60	20	20	0	0

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Course Educational Objectives(CEOs):

- To understand the students with the applications of Standard data structure in real world problems.
- To provide knowledge of creation of new data structures.
- To familiarize the students with the analysis and design a particular problem.

Course Outcomes (Cos):students will be able to

- Demonstrate familiarity with major algorithms and data structures.
- Analyze performance of algorithms.
- Choose the appropriate data structure and algorithm design method for a specified application.
- Demonstrate understanding of the abstract properties of various data structures such as stacks, queues, lists, trees and graphs
- Demonstrate understanding of various sorting algorithms, including bubble sort, insertion sort, selection sort, heap sort and quick sort.
- Understand and apply fundamental algorithmic problems including Tree traversals, Graph traversals, and shortest paths.
- Demonstrate understanding of various searching algorithms.
- Program multiple file programs in a manner that allows for reusability of code.
- Compare different implementations of data structures and to recognize the advantages and disadvantages of the different implementations.
- Write complex applications using structured programming methods.

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BCCA204	Compulsory	Data Structure using C	3	1	0	4	60	20	20	0	0

UNIT - I

The Concept of Data Structure, Abstract Data Type, Concept of List and Array, Introduction to Stack, Stack as an Abstract Data Type, Primitive Operations on Stack, Stack's Applications - polish notations Infix, Postfix, Prefix and Recursion. Introduction to Queues, Primitive operations on Queues, Queue as an Abstract Data Type, Circular Queue, Dequeue, Priority Queue, Applications of Queue.

UNIT - II

Linked List - Introduction to Linked List, Memory Representations of Linked List, comparison; Operations on Linked List, Linked Representation of Stack and Queue, Header Nodes. Types of Linked List : Doubly Linked List, Circular Linked List, Application of Linked List, Self Referential Structures.

UNIT -III

Trees: Definition, Basic Terminology of Trees, Tree Representations as Array and Linked. Binary Trees, Binary Tree Operations. Traversal of Binary Trees – In order, Preorder& Post order, Complete Binary Tree, almost complete binary tree; Application of Binary Tree.

UNIT-IV

Complexity: concept and notations. Searching: Sequential, Binary and their comparison. Sorting - External and Internal Sorting, Insertion Sort, Selection Sort, Quick Sort, Bubble Sort, Heap Sort, Comparison of Sorting Methods. Hashing;

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BCCA204	Compulsory	Data Structure using C	3	1	0	4	60	20	20	0	0

UNIT-V

Graphs - Introduction to Graphs, Basic Terminology, Directed, Undirected and Weighted graph, Representation of Graphs, Graph Traversals - Depth First and Breadth First Search. Applications of Graphs.

Text Books:

1. Kruse R.L. Data Structures and Program Design in C; PHI
2. Aho, "Data Structure & Algorithms".
3. Trembly and SORRENSON, "Introduction to Data Structure with Applications".
4. Tennenbaum A.M. & others, "Data Structures using C & C++"; PHI
5. Horowitz & Sahney, "Fundamentals of Data Structures", Galgotia Publishers.
6. Yashwanth Kanetkar, "Understanding Pointers in C", BPB.
7. Lipschultz, "Data Structure", (Schaum's Outline Series, McGraw Hill publication)
8. Ellis Horowitz and Sartaj Sahney, "Fundamentals of Computer Algorithm"

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BCCA207	Compulsory	Lab- II (Data Structure Lab in C/C++)	0	0	4	2	0	0	0	30	20

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***Teacher Assessment** shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

- To familiarize the students with programming and to encourage them to develop their logic.
- To make students well versed with C++ language to solve problems efficiently.
- Using simple and well drawn illustrations develop their programming skills using modular programming.

Course Outcomes (Cos): Student will be able to:

- Develop algorithms for problems.
- Apply the programming concepts to solve the given problems.
- Write the programs using modular programming.
- Understand and write programs using various data structures very efficiently.
- To choose a suitable data structure for a given problem.
- Write the programs using pointers and to manage memory.
- Implement programs of file handling.

List of Programs:

1. Write a program to create a two dimensional array and perform add, subtract and multiplication operations.
2. Write a program to create a two dimensional array using dynamic memory allocation.
3. Write a program to implement stack.

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BCCA207	Compulsory	Lab- II (Data Structure Lab in C/C++)	0	0	4	2	0	0	0	30	20

4. Write a program to convert infix expression into postfix expression.
5. Write a program to check balanced parentheses for a given infix expression.
6. Write a program to evaluate postfix expression.
7. Write a program to implement queue.
8. Write a program to implement circular queue.
9. Write a program to implement link list with insert, delete, search, view, and delete function.
10. delete function.
11. Write a program to implement ordered link list.
12. Write a program to add two polynomials.
13. Write a program to create doubly link list.
14. Write a program to implement tree with insert, delete and search function.
15. Write a program for in order, post order and preorder traversal of tree.
16. Write a program for binary search and sequential search using recursion.
17. Write a program for bubble sort and sequential search.
18. Write a program for insertion sort and quick sort.

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