Semester I& II (Batch 2022-26)

| COURSE CODE | CATE-GORY | COURSE NAME | TEACHING &EVALUATION SCHEME | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | | | |
| | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* | L | T | P | CREDITS |
| ENG101 | AEC | Foundation English | 60 | 20 | 20 | - | - | 4 | 0 | 0 | 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 Educational Objectives (CEOs): The students will

- **CEO 1** Understand the different nuances of communication.
- **CEO2** understand the features of listening and reading skills.
- **CEO3** Comprehend the factors that influence use of grammar and vocabulary in speech and writing
- **CEO4** study the essential aspects of effective written communication through Business letters and email writing for professional success.
- **CEO5** Develop competency in professional communication.

## Course Outcomes (COs): The students will be able to

- **CO1** develop a comprehensive understanding of the theoretical and practical aspects of communication.
- **CO2** understand and the different aspects of listening and reading.
- **CO3** Apply grammatical rules in speech and writing.
- **CO4** Use proper formats of written business communication.
- **CO5** Demonstrate different strategies for using professional communication skills.

### ENG101
### Foundation English

## COURSE CONTENTS

### UNIT I
### Communication

Communication: Nature, Meaning, Definition, Process, Functions and importance, Characteristics of Communication, Verbal and Non-Verbal Communication, Barriers to Communication.

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| ENG101 | AEC | Foundation English | 60 | 20 | 20 | - | - | 4 | 0 | 0 | 4 |

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical, C - Credit.
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## UNIT II
### Listening and Reading Skills
Listening: Process, Types, Difference between Hearing and Listening, Benefits of Effective Listening, Barriers to Effective Listening, Overcoming Listening Barriers, and How to Become an Effective Listener, Developing Reading Skills: Reading Comprehension, Process, Active & Passive reading, Reading speed Strategies, Benefits of effective reading, SQ3R Reading technique.

## UNIT III
### Basic Grammar
Basic Language Skills: Grammar and usage- Parts of Speech, Tenses, Subject and Verb Agreement, Prepositions, Articles, Types of Sentences, Direct - Indirect, Active - Passive voice, Phrases & Clauses.

## UNIT IV
### Business Letters
Business Correspondence: Business Letters, Parts & Layouts of Business Letter, Job application and Resume, Application Calling/ Sending Quotations/ Orders/ Complaints. E-mail writing, Email etiquettes

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

### Suggested Readings:

- Adair John (2003). **Effective Communication**. London: Pan Macmillan Ltd.

- Thomson A.J. and Martinet A.V. (1991). **A Practical English Grammar** (4th ed). New York: Ox- ford IBH Pub

- Rizvi Ashraf (2005). **Effective Technical Communication**. New Delhi: Tata Mc Graw Hill

- Kratz Robinson (1995). **Effective Listening Skills**. Toronto: ON: Irwin Professional Publishing.

## Name of the Program: BCA +MCA (No Branch/ Banking Technology)

| SUBJECT CODE | Category | SUBJECT NAME | TEACHING & EVALUATION SCHEME | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | L | T | P | CREDITS |
| | | | End Sem University Exam | Two Term Exam | Teachers Assessment* | End Sem University Exam | Teachers Assessment* | | | | |
| BCCA 102N | BS | Mathematical Foundation of Computer Science I | 60 | 20 | 20 | 0 | 0 | 3 | 1 | 0 | 4 |

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**Course EducationalObjectives (CEOs):**
To introduce the students with the basics of set theory, calculus, and linear algebra.

**Course Outcomes (COs):**
After the successful completion of this course students will be able to
- *Understand the concepts of set theory.*
- *Learn the basics of differential and integral calculus.*
- *Apply the fundamentals of Calculus.*
- *Learn the basics of Linear algebra.*

**UNIT – I**
**Set Theory:** Sets and their representations, Empty set, Finite and Infinite sets, Equal sets, Subsets, Subsets of a set of real numbers especially intervals (with notations), Power set, Universal set, Venn diagrams, Union and Intersection of sets, Difference of sets, Complement of a set, Applications of sets.

**UNIT – II**
**Function:** Real Valued function, Classification of real valued functions, Pictorialrepresentation of a function, domain, co-domain and range of a function, Real valued functions, domain and range of these functions: Constant, Identity, Polynomial, Rational, Modulus, Signum, Exponential, Logarithmic, Greatest integer functions (with their graphs) Sum, difference, product and quotients of functions.

# ShriVaishnavVidyapeethVishwavidyalaya, Indore

# ShriVaishnavInstitute of Computer Applications

## Name of the Program: BCA +MCA (No Branch/ Banking Technology)

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | THEORY | | | PRACTICAL | | | | | |
| | | | End Sem University Exam | Two Term Exam | Teachers Assessment* | End Sem University Exam | Teachers Assessment* | | | | |
| BCCA 102N | BS | Mathematical Foundation of Computer Science I | 60 | 20 | 20 | 0 | 0 | 3 | 1 | 0 | 4 |

**UNIT – III:** Calculus
**Differentiation:** Introductions, Derivative of a function, Derivative of a constant, Derivative of a product of a constant and a function , Derivative of the sum or difference of two functions, Derivative of the product of two functions (product formula), Derivative of the quotient of two functions (Quotient formula) – Without Proof, Derivative of $x^n$ w.r.t. $x$, where $n$ is any rational number, Derivative of $e^x$, Derivative of $\log_e x$, Derivative of $a^x$, Derivative of trigonometric functions from first principles (Without Proof). Applications.

**UNIT – IV**
**Integration:** Introduction, Definition, Standard formulae, Rules of integration, Method of substitution, Integration by parts, definite integrals. Applications.

**UNIT – V**
**Matrices and Determinant:** Introduction matrices, Types of matrices, Operation on matrices, Transpose of a matrix, Matrix Multiplication, Determinants, Properties of determinants, Product of determinants, Minors and co-factors, Adjoint of square matrix, Singular and non-singular matrices, Inverse of a matrix, Solution of system of linear of equations using matrix method, Cramer's rule,

**Reference books:**

1. Paria G., Differential Calculus, Scholar's Publications, Indore.

2. Paria G., Integral Calculus, Scholar's Publications, Indore.

3. Dr. B. S. Grewal, Higher Engineering Mathematics.

4. Differential Calculus by Shanthi Narayan.

5. Integral Calculus by Shanthi Narayan.

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## Name of the Program: BCA +MCA (No Branch/ Banking Technology)

| COURSE CODE | CATEGORY | COURSE NAME | L | T | P | CREDITS | THEORY END SEM University Exam | THEORY Two Term Exam | THEORY Teachers Assessment* | PRACTICAL END SEM University Exam | PRACTICAL Teachers Assessment* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TEACHING & EVALUATION SCHEME | | | | |
| BCCA104 | DCC | Fundamentals of Computers and IT | 3 | 1 | 0 | 4 | 60 | 20 | 20 | 0 | 0 |

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## CourseEducationalObjectives (CEOs):

- To create basic understanding of Computer System
- To provide knowledge of concepts of Operating Systems
- To familiarize the students with the need, goal, function and architecture of various operating system available
- To develop the understanding of trends of IT industry, safe and ethical use of IT

## Course Outcomes (COs):students will be able to

- To understand the need, goal and function of the OS
- Understand and use Windows and Linux operating systems commands.
- Organizing and manipulating files and folders.
- Understand and Use different editors of Linux
- Manipulating data using input output redirection
- Writing shell scripts
- To exercise the safe computer practices

## Unit–I

**Introduction to Computer Fundamentals:** Introduction to Computer, Computer System Hardware, Computer Memory, Input and Output Devices, Interaction between User and Computer, Introduction to Free and Open Source Software, Definition of Computer Virus, Types of Viruses, Use of Antivirus software.

## Unit–II

**Computer**: Definition, Classification, Organization i.e. CPU, register, Bus architecture, Instruction set, Memory & Storage Systems, I/O Devices, and System &Application Software. Computer Application in e-Business, Bio-Informatics, health Care, Remote Sensing & GIS, Meteorology and Climatology, Computer Gaming, Multimedia and Animation etc.

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | THEORY | | | PRACTICAL | |
| | | | | | | | END SEM University Exam | Two Term Exam | Teachers Assessment* | END SEM University Exam | Teachers Assessment* |
| BCCA104 | DCC | Fundamentals of Computers and IT | 3 | 1 | 0 | 4 | 60 | 20 | 20 | 0 | 0 |

## Unit–III

Basics of Operating System, Definition of Operating System, Objectives, types, and functions of Operating Systems. Working with Windows Operating System: Introduction, The Desktop, Structure of Windows, Windows Explorer, File and Folder Operations, The Search, The Recycle Bin, Configuring the Screen, Adding or Removing New Programs using Control Panel, Applications in windows (Paint, Notepad, WordPad, Calculator).

## Unit–IV

Introduction of Basic Commands of LINUX and Editors, Managing Files and Directories in LINUX, Programming Environment in LINUX, Writing and executing programs in LINUX.

## Unit–V

**Compilers & Interpreters:** aspects of compilation, memory allocation, compilation of expression compilation of control structures, code optimization, interpreters. Software Tools: Software tools for program development, editors, debug monitors, programming environment, user interfaces

**Text Books:**
1.V. Rajaraman, "Fundamentals of Computers", PHI.
2.Peter Norton's, "Introduction to Computers", TMH.
3.Operating Systems –Silberschatz and Galvin -Wiley India.
4. Andrew Tananbaum, Computer Networks:, PHI
5. PramodKoparkar "Unix for You":, TMH.
6. MachteltGarrels, " Introduction to Linux".
7. Sanders, D.: Computers Today, Tata McGraw-Hill

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | TEACHING & EVALUATION SCHEME | | | | |
| BCCA105 | AEC | Programming Methodology and C | 3 | 1 | 0 | 4 | 60 | 20 | 20 | 0 | 0 |

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### Course EducationalObjectives (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.
- To cover the various data structures and their applications.

### 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.
- Write the programs using pointers and to manage memory.
- Implement programs of file handling.

### Unit-I
**An overview:** Problem identification, analysis, design, coding, testing & debugging, implementation, modification & maintenance; algorithms & flowcharts; Characteristics of a good program - accuracy, simplicity, robustness, portability, minimum resource & time requirement, modularization; Rules/ conventions of coding, documentation, naming variables; Top down design; Bottom-up design.

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**Unit-II**
**Fundamentals of C Programming:** History of C; Structure of a C Program; Data types; Constant & Variable, naming variables; Operators & expressions; Control Constructs – if-else, for, while, do-while; Case switch statement; Arrays; Formatted & unformatted I/O; Type modifiers & storage classes; Ternary operator; Type conversion & type casting; Priority & associativity of operators.

**Unit-III**
**Modular Programming:** Functions; Arguments; Return value; Parameter passing – call by value, call by reference; Return statement; Scope, visibility and life-time rules for various types of variable, static variable; Calling a function; Recursion – basics, types of recursion- direct, indirect.

**Unit-IV**
**Advanced Programming Techniques:** Special constructs – Break, continue, exit (), goto& labels;Pointers - & and * operators, pointer expression, pointer arithmetic, dynamic memory management functions like malloc(), calloc(), free(); String; Pointer v/s array;Structure – basic, declaration, membership operator.

**Unit-V**
**Miscellaneous Features:**printf&scanffamily;C preprocessor – basics, #Include, #define, #undef, conditional compilation directive like #if, #else, #elif, #endif, #ifdef and #ifndef

**Text Books:**
1. KanitkarYashwant, 'Let us C', BPB New Delhi
2. Balaguruswami, 'Ansi C', TMH, Delhi
3. Kerninghan& Ritchie "The C programming language", PHI
4. Schildt, "C:The Complete reference" 4th ed TMH.
5. Cooper Mullish, "The Spirit of C", Jaico Publishing House, Delhi

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|---|---|---|---|---|---|---|---|---|---|---|---|
| BCCA106 | AEC | Programming Lab using 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)

### CourseEducational 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.
- To cover the various data structures and their applications.

### 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.
- Write the programs using pointers and to manage memory.
- Implement programs of file handling.

### List of Experiments:
1. Define an algorithm and flowchart. Draw algorithm and flow chart for a program that converts an input Fahrenheit degree into Celsius equivalent.
2. Write an algorithm and a C program to find the greatest among three numbers.
3. WAP to print an input string in lower case, upper case and mixed case using library function.

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | THEORY | | | PRACTICAL | |
| BCCA106 | AEC | Programming Lab using C | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 30 | 20 |

4. WAP to read in a three digit number produce following output (assuming that the input is 679)

    6 hundreds

    7 tens

    9 units

5. WAP a C program to reverse an input number.
6. Draw a flow chart to find prime number from 1 to 100.
7. WAP to find factorial of accepted number.
8. WAP to calculate factorial of a number using recursion.
9. WAP in C to generate Fibonacci series.
10. WAP in C to generate Pascal triangle.
11. WAP in C to swap values of two variables.
12. WAP in C to search a given element in an array using linear search.
13. WAP to sort an integer array in ascending and descending order according to user's choice.
14. Write a menu driven program to perform matrix addition, subtraction and multiplication.
15. WAP a C program to reverse a string by recursion.
16. WAP to read and write a structure.

**Text Books:**

1. KanitkarYashwant, 'Let us C', BPB New Delhi
2. Balaguruswami, 'Ansi C', TMH, Delhi
3. Kerninghan& Ritchie "The C programming language", PHI
4. Schildt "C:The Complete reference" 4th ed TMH.
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