Program: BCA
Semester: First
Course: Computer Fundamentals
Course Code: 3C.101

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3	0	0	3

Course Objective:

- Understand the meaning and basic components of a computer system
- Define and distinguish Hardware and Software components of computer system
- Explain and identify different computing machines during the evolution of computer system
- Gain knowledge about five generations of computer system
- Explain the functions of a computer
- Identify and discuss the functional units of a computer system
- Identify the various input and output units and explain their purposes
- Understand the role of CPU and its components
- Understand the concept and need of primary and secondary memory
- Discuss the advantages, limitations and applications of computers
- Understand the classification of computers

Unit I:

Introduction- Characteristics of computer, Evolution of computer, Capabilities and Limitations of computer, Generations of Computer, Types of Computer (micro, mini, mainframe, supercomputer), Block Diagram of computer, Basic components of a computer system- input unit, output unit, arithmetic and logic unit, control unit, central processing unit, processors, Memory- main memory organization, main memory capacity, RAM, ROM, EPROM, PROM, Cache Memory. Input Devices- Keyboard Direct Entry: Card readers, scanning devices (BAR CODE, OMR, MICR), Voice input devices, Light pen, Mouse, Touch Screen, Digitizer, Scanner. Output Devices- Printers- Impact and Non-impact printers. CRT, LCD, CD-WRITTER, ZIP DRIVE, DVD Introduction to Web Camera, modem.

Unit II:

Number System: Binary, octal, Hexadecimal Number, their addition and substraction, Base conversions, other BCD codes, Grey, ASCII, EBCDIC. Boolean Algebra: Laws and theorems of Boolean algebra. De Morgan's theorem, XOR and XNOR gates. Half and Full Adder and Subtractor circuits. Fundamentals: Products, sum of products and Product of sums, Form of Boolean expressions, Truth Tables and Karnaugh maps, pair reads octets and Karnaugh simplification. Mltiplexers BCD to Decimal to BCD decorders and decoders characteristics of digital integrated digitals. Flip Flop: RS Flif Flop, Clocked, RS Flip Flop, D Flip Flop. Flip Flop Switching time, OK Flip Flop. JK Master slave Flip Flop. Clock wave forms, Shift registers: Serial in and serial out, Parallel in and parallel out. Counters: asynchronous counters synchronous counters, ring counter. Memories for Digital System: Semiconductor Memories, Memory organization expansion classification of memories on the basis of principles of operation, physical characteristics and fabrication technology, ROM and basic memory cells.

Unit III:

Computer Software Definition of software, Types of software, System software, Operating system, Compilers, interpreters, Assemblers, Linkers, Loaders, Programming Languages etc.

Unit IV:

Data Communication and computer Networks- Data Transmission mode, Data transmission media, what is computer Network, Network types, Network Topologies, communication Protocol, OSI Model, The Internet, Definition, Brief history, Basic Services, Email, File Transfer protocol, Telnet, Internet Search Tools, Gopher, Archie, World Wide Web, WWW Browsers: Line Browsers, Graphical Browsers, Java Enabled Browsers, uses of the Internet, Internet Service Providers and types of Internet Connection Direct/Leased line Connection, Remote Dial up Connection, SLIP/PPP Connection.

Suggested Readings:

1. ***Computer Fundamentals- Sinha, Pradeep K. Sinha, Preeti.***
2. ***Fundamental of Computers- Rajaraman, V***
3. ***Computer Fundamentals: Architecture and Organisation- Ram, B.***

Program: BCA
Semester: First
Course: MS-Office
Course Code: 3CP.101

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Course Objective:

- Recognize when to use each of the Microsoft Office programs to create professional and academic documents.
- Use Microsoft Office programs to create personal, academic and business documents following current professional and/or industry standards.
- Apply skills and concepts for basic use of computer hardware, software, networks, and the Internet in the workplace and in future coursework.

MS Windows: Introduction to M.S. Windows; Features of Windows; Various versions of windows & its use; working with Windows; My Computer and Recycle bin; Desktop, Icons and Windows Explorer; Screen description & working styles of Windows; Dialog Boxes & Toolbars; working with Files & Folders; simple operations like copy, delete, moving of files and folders from one drive to another, Shortcuts & Autostarts; Accessories and Windows Settings using setting common devices using control panel, modem, printers, audio, network, fonts, creating users, internet settings, Start button & Program lists; Installing and Uninstalling new Hardware & Software program on your computer. Introduction to Internet and Email; searching information through a search engines.

MS Word Basics: Introduction to MS Office; Introduction to MS Word; Features & area of use. Working with MS Word; Menus & Commands; Toolbars & Buttons; Shortcut menus, Wizards & Templates; Creating a New Document; Different Page Views and layouts; Applying various Text Enhancements; Working with Styles, Text Attributes; Paragraph and page Formatting; Text Editing using various features; Bullets, Numbering, Auto Formatting, Printing & various print options.

Advanced Features of MS Word: Spell Check, Thesaurus, Find & Replace; Headers & Footers; Inserting- Page Numbers, Pictures, Files, Auto-texts, Symbols etc. Working with Columns, Tabs & Indents; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; adding References and Graphics; Mail Merge, Envelops & Mailing Labels. Importing and exporting to and from various formats.

MS Excel: Introduction and area of use; Working with MS Excel; concepts of Workbook and worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Column Freezing , Labels, Hiding, Splitting etc. Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.

MS PowerPoint: Introduction & use; Working with MS PowerPoint; Creating a New Presentation; Working with Presentation; Using Wizards; Slides & its different views; Inserting, Deleting and Copying of Slide Working with Notes, Handouts, Columns & Lists; Adding Graphics, sounds and Movies to a Slide; Working with PowerPoint Objects; Designing & Presentation of a Slide Show; printing Presentations, Notes, Handouts with print options.

Program: BCA
Semester: First
Course: Fundamentals of Computer Programming
Course Code: 3C.102

L	T	P	C
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Course Objective:

- Explain Computer Programming concepts
- Design algorithmic solution to problems
- Ability to design programs with Interactive Input and Output
- Ability to design programs utilizing arithmetic expressions
- Ability to design programs utilizing repetition, decision making, arrays, classes
- Understanding Software Engineering principles
- Design programs using file Input and Output
- Develop recursive solutions
- Ability to test and verifying programs
- Develop simple search and sort algorithms

Unit I:

History of C, Sample programming, Basic structure and execution of C Problem Solving: Problem Identification, Analysis, flowcharts, Decision Tables, Pseudo codes and algorithms, Program Coding, Program Testing and Execution. Steps for problem solving, computer as a tool for problem solving. Algorithm and its features. Flowcharts and their design.

Unit II:

Elementary data types, variables, constants and identifiers. Integer, character floating point and string constants. Variable declarations. Syntax and semantics. Reserved word. Initialization of variable during declarations Constant data types. Expression in C, precedence and associativity of C operators, unary, binary and ternary operators. C arithmetic operators, assignment operators, relational operators, logical operators and bit – wise operators. Side effects of operators. Expression statement. Conditional Statement-if, if-else, switch Iterative Statement-while, do-while, for Other Statement–break, continue, go to, return. Array and its application, Strings.

Unit III:

Function: function declaration. Calling a function. Parameters call by value, Call by reference and its absence in C. Recursion and how it works. Pointers, definition, declaration, and initialization, accessing a variable through pointers.

Unit IV:

Structure – Declaration and use. Structure member resolution and structure pointer member resolution operators. Programs to show the use of structure, Union –Declaration and use. Standard C library. Files in C opening, closing, reading and writing of files. Seeking forward and backward. Simple examples of file handling programs.

Suggested Readings:

1. Let us C-Yashwant Kanetkar.

2. Programming in C- Balguruswamy
3. Structured programming approach using C-Forouzah &Ceilberg Thomson learning publication.
4. Pointers in C – Yashwant Kanetkar
5. How to solve it by Computer – R. G. Dromy
6. Introduction to algorithms – Cormen, Leiserson, Rivest, Stein

Program: BCA
Semester: First
Course: C Programming Lab
Course Code: 3CP.102

L	T	P	C
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Course Objective:

- Construct programs that demonstrate effective use of advanced c features including the pre-processor, pointers, void, static and external variables, advanced data structures, and dynamic memory management
- Select and model data using primitive and structured types
- Analyze and construct effective algorithms
- Use development environment features including make processors, editors, debuggers, compilers, linkers, and libraries.
- Identify and comprehend c documentation
- Work well with peer developers in a team situation including mentoring and peer reviews

Program:

1. To print the word “Hello”.
2. To sum two nos. Where the numbers are taken through the keyboard.
3. To calculate Simple Interest where the principle, no. Of years and rate are given.
4. An employee basic salary is less than Rs. 1500, then HRA = 10% of basic salary and DA = 90% OF BASICS. If this salary is either equal to or above Rs. 1500 then HRA = Rs. 500 and DA = 98% OF BASIC SALARY. If the employee’s salary is input through the keyboard then write a program to find its Gross Salary, where Gross Salary = Basic Salary + HRA + DA
5. The marks obtained by a student in 5 different subjects are input through the keyboard. The student gets a division as per the following rules:
   Percentage above or equal to 60 – First Division
   Percentage between 50 and 59 – Second Division
   Percentage between 40 and 49 – Third Division
   Percentage less than 40 – Fail
6. To print numbers from 1 to 10 using for loop
7. Print:
   ```
   1 2 3 4                    4 3 2 1
   1 2 3        and           4 3 2
   1 2                        4 3
     1                          4
   ```
8. To find the factorial of a given number.
9. To print Fibonacci numbers.
10. To display reversing digit of an integer.
11. To demonstrate switch case.
12. To calculate the sum of three number using function.
13. To find the square of any number using function.
14. To swap two numbers using function.
15. To find the sum of 20 numbers using an array.
16. To print a 2D – array.

Program: BCA
Semester: First
Course: Principles of Management
Course Code: 3C.131

L	T	P	C
4	0	0	4

Course Objective:

- Evaluate the global context for taking managerial actions of planning, organizing and controlling.
- Assess global situation, including opportunities and threats that will impact management of an organization.
- Integrate management principles into management practices.
- Assess managerial practices and choices relative to ethical principles and standards.
- Specify how the managerial tasks of planning, organizing, and controlling can be executed in a variety of circumstances.
- Determine the most effective action to take in specific situations.
- Evaluate approaches to addressing issues of diversity.

Unit I:

Management and its various functions: Definition, nature, scope and function of management, organizational objectives, management by objective. Evolution of management thoughts and Thinkers: Scientific Management, General administrative theories, Quantitative approach, Behavioral approach, Systems approach, Contingency approach.

Unit II:

Planning: Nature, Scope and objectives of planning, types of Plans, steps in planning, Business forecasting. Decision making: Importance, types, process of Decision making Organizing: nature, importance, process, formal & informal organizations, organization chart, organizing principles, span of management: factors determining effective span

Unit III:

Departmentation: Definition, Departmentation by function, territory, product/service, customer group and. Authority: definition, types, responsibility and accountability. Delegation: Definition, steps in delegation, obstacles to delegation and their elimination. Centralization Vs De-Centralization. Staffing: definition, manpower management, factors affecting staffing, selection process, techniques, performance appraisal, Communication: importance, process, barriers and breakdown of communication.

Unit IV:

Controlling: control process, types, barriers to control making, control techniques: budget and non-budgetary control devices, Social responsibility and business ethics

Suggested Readings:

1. Essentials of Management, Harold Koontz & Weirich: (Tata McGraw Hill)
2. Principles & Practices of Management, L.M. Prasad , S.Chand
3. Management, Stephen Robbins, INS Pub.
4. Management, Stoner Freeman & Gilbert Jr - Prentice Hall of India, 6th Edition
5. Principles of management- Ramasamy.T Himalaya Publishing House 8th edition

Program: BCA
Semester: First
Course: Software Constructs and Tools
Course Code: 3C.104

L	T	P	C
4	0	0	4

Course Objective:

- Understand the internal working of computer system including CPU, Memory, Input/Output system.
- Understand the basic concept of algorithm and programming.
- Able to implement problem solving techniques of software development.
- Model the structure and behavior a software system the UML class diagrams and state diagrams.
- Basic integration of system and their development.
- Effective use of tools in development and debugging of software.

UNIT I:

Introduction to System: Definition and concept of system, Types of systems, description of different types of systems. Concept of Data and Information-Types, Characteristics & Importance of Information. Relationship between Data & Information.

Introduction to IT & IS: Concept of Technology and IT, Concept of IS, Why Computer, What is Computer, Relationship between IT and IS. Understanding Computer Components & Operations: Hardware: Definition, Types- Input, Output, CPU and Storage-Internal & External, Examples of each. Software: Definition, Types of Software with definition and examples-System, Utility & Application .Major Operations in a Computer: Input, Processing, Output & Storage.

UNIT II:

Introduction to Program related Terminologies with Definition & Example: Software, Program, Programming Language: types of programming languages, Syntax/Statement, Semantics, Compiler, Interpreter, Difference between Compiler & Interpreter, Programming Error: Syntax error vs. Semantic error, Variable, Constant, Identifier, Difference between Variable & Constant, Assigning value to a variable & constant, Data Types: two basic data types-Character and Numeric, Functions: definition, parts of a function, operations on a function. Introduction to Data Hierarchy: Character, Field, Record, File & Database.

UNIT III:

Understanding the approaches to Problem Solving: Paradigm- Procedural & Object Oriented. Understanding the Programming Process: Concept of Programming, Program and Programming Logic. Detail explanation of six Programming Phases: Understand the problem, Plan the logic, Code the program, Use software to translate the program to machine language, Test the program, Put the program into production.

Plan the Logic: Introduction to Program Planning Tools- Flowchart and Pseudo code, Need of Flowchart and Pseudo code, various symbols used in flowchart, connector symbols used in flowchart, declaring and using variables and constants, performing arithmetic operations. Practice Exercise

UNIT IV:

Introduction to Structured Programming Constructs using Flow Charts: Sequence, Selection/ Decision and Loop, uses of relational comparison operators, understanding AND, OR logic.Understanding advantages of looping using a loop control variable. Learning common loop mistakes. Working with nested loops. Practice Exercise.Understanding modularization and its advantages, creating_modular programs.

Suggested Readings:

1. Let us C-Yashwant Kanetkar.
2. Programming in C- Balguruswamy
3. Computer Fundamentals- Sinha and Sinha
4. Fundamentals of Computer algorithm – Horowitz, Sahni and Rajsekaran

Program: BCA
Semester: First
Course: Mathematical Foundation for Computer Science
Course Code: 3C.103

L	T	P	C
4	0	0	4

Course Objective:

- Students will be able to read, understand and apply definitions and theorems in basic discrete mathematics
- Formulate simple definitions, examples and proofs in discrete mathematics;
- Understand discrete mathematical preliminaries
- Apply discrete mathematics in formal representation of various computing constructs
- Recognize the importance of analytical problem solving approach in engineering problems

Unit I:

DETERMINANTS: Definition, Minors, Cofactors, Properties of Determinants.
MATRICES: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices, Adjoint, Inverse, Cramer's Rule

Unit II:

Probability: Fundamental Principles of Counting, Permutations & Combinations, Baye's Theorem, Random Variables, probability Distribution, Binomial distribution.

Unit III:

VECTOR ALGEBRA: Definition of a vector in 2 and 3 Dimensions; Double and Triple Scalar and Vector Product and their Applications.

Unit IV:

ANALYTICAL GEOMETRY: Translation and rotation of rectangular axes, invariants, general equation of second degree-reduction to standard forms and classification. Plane polar equation of a straight line, circle, ellipse, parabola and hyperbola.

Suggested Readings:

1. Engineering Mathematics- H. K. Dass

Program: BCA
Semester: First
Course: Life Skills 1
Course Code: 40B.101

L	T	P	C
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Course Objective:

To impart basic skills of Professional Communication in English through intensive practice to the Students, so as to enable them to function confidently & effectively in that Language in the Professional Sphere of their life

- *The student must have some basic command of English so that the Student must be able to:*
- *Write reasonably & grammatically*
- *Understand (if not use) at least some 2500 general purpose words of English*
- *Use some 2000 (at least 1500) general-purpose words of English to express himself/herself in writing & 1500 such words to talk about day-to-day events & experiences of life.*
- *Understand slowly-delivered spoken material in Standard Indian English, and*
- *Speak reasonably clearly (if not fluently) on routine matters with his fellow Students, with proper word stress, intonation pattern, accent and perfect articulation*

LANGUAGE INITIATORS

UNIT I: Basic Grammar

- *Noun, Verb, Adverb, Adjective & Preposition*
- *Sentence*
- *Tense: Present ,Past & Future*
- *Voice*
- *Narration*
- *Concord*
- *English Modals*
- *Connectives*
- *Degree of Comparison*
- *Nominalization*

UNIT II: Practice Exercise

- *Re-Writing Sentences*
- *Gap Filling*
- *Common Errors*
- *Phrases & Idioms*
- *Homophones (Commonly Confused Words)*
- *Vocabulary Building*
- *Word Quiz*

UNIT III: WRITTEN COMMUNICATION SKILLS

- *Requisites of good sentence writing*
- *Effective sentence structure*
- *Sentence Building/ Sentence coherence*
- *Sentence Emphasis/theme*
- *Development of a paragraph*
- *Paragraph structure*
- *Principles of paragraph Writing*

- *Paragraph length/ coherence/ Division*

Unit IV: ETIQUETTES & MANNERS

- *Dinning etiquettes*
- *Workplace etiquettes*
- *Professional Manners*
- *Social Etiquettes*
- *Group Behavior*
- *Tour & Travel Etiquettes*

Suggested Books & Readings:

- *Monippally, Matthukutty. M. 2001. Business Communication Strategies. 11th Reprint. Tata McGraw-Hill. New Delhi*
- *Swets, Paul. W. 1983. The Art of Talking So That People Will Listen: Getting Through to Family, Friends and Business Associates. Prentice Hall Press. New York*
- *Lewis, Norman. 1991. Word Power Made Easy. Pocket Books*
- *Sen , Leena .Communication Skills ; Eastern Economy Edition*
- *Ghanekar , Dr. Anjali . Essentials of Business Communication Skills ; Everest Publishing House*
- *David Green . Contemporary English Grammar, Structure & Composition ; MacMillan*
- *Dictionary; Oxford*
- *Dictionary ; Longman*

Websites

- *www.tatamcgrawhill.com/digital_solutions/monippally*
- *www.dictionary.cambridge.org*
- *www.wordsmith.org*
- *www.edufind.com*
- *www.english_the_easy_eay.com*
- *www.englishclub.com*
- *www.english_grammar_lessons.com*
- *www.wikipedia.org/wiki/english_grammar*