CENTURION UNIVERSITY

BACHELOR IN COMPUTER APPLICATIONS

(Under CBCS Scheme)

DETAIL SYLLABUS FOR BCA 1ST YEAR UNDER CBCS

SEMESTER-I

Sl no	Subject Code	Subject	Contact Hours per week (L+T+P)	Credits
1		AEC-1 ENVIRONMENTAL STUDIES	2+0+0	2
2		CORE COURSE-1 OFFICE AUTOMATION	3+1+0	4
3		CORE COURSE-2 FUNDAMENTALS OF COMPUTER S	3+1+0	4
4		GE-1	3+1+0	4/5
5		CORE COURSE PRACTICAL - 1 OFFICE AUTOMATION LAB	0+0+3	2
6		CORE COURSE PRACTICAL - 2 FUNDAMENTALS OF COMPUTER S LAB	0+0+3	2
7		GE LAB/TUTORIAL -1	2 + 0 +0	2/1
		TOTAL CREDITS		**20**
TOTAL CUMULATIVE CREDITS				**20**

SEMESTER-II

Sl no	Subject Code	Subject	Contact Hours per week (L+T+P)	Credits
1		AEC-2 COMMUNICATIVE ENGLISH	2+0+0	2
2		CORE COURSE-3 COMPUTER ORGANIZATION AND SYSTEM ARCHITECTURE	3+1+0	4
3		CORE COURSE-4 PROGRAMMING IN 'C'	3+1+0	4
4		GE-2	3+1+0	4/5
5		CORE COURSE PRACTICAL -3 COMPUTER ORGANIZATION AND SYSTEM ARCHITECTURE LAB	0+0+3	2
6		CORE COURSE PRACTICAL -2 PROGRAMMING IN 'C' LAB	0+0+3	2
7		GE LAB/TUTORIAL-2	2 + 0 +0	2/1
		TOTAL CREDITS		**20**
TOTAL CUMULATIVE CREDITS				**40**

Semester: 1

AECC 1: ENVIRONMENTAL STUDIES (3-1-0)

MODULE-I

Concepts of Ecology & Environment: Definition-Environment, Ecology & Ecosystem; Environmental concepts – Atmosphere, Hydrosphere, Lithosphere & Biosphere, Environmental factors – Abiotic factors (Climate & Edaphic) & Biotic factors, Environmental gradients & limiting factor.

Concept of Ecosystem & Processes: Type & Structure, Ecosystem Processes – Energy flow, food chain, food web & ecological pyramids; Biogeochemical cycles – Hydrological cycle(water), gaseous cycle(carbon & oxygen), sedimentary cycle(nitrogen & sulphur).

MODULE-II

Population ecology & Ecological succession:

Population ecology: Population density, natality, mortality, population age structure, population growth curves & carrying capacity.

Ecological succession: Characteristics, types (Hydrosere & Xerosere) & Process.

Environmental Pollution: Water pollution, Noise pollution, Air pollution(source, effect, control measure), Depletion of ozone layer – cause, effect & control measure, Green House Effects & Global warming, Acid rain, Biological concentration and biomagnifications, Sewage & sewage treatment.

MODULE-III

Conservation of natural resources: Biodiversity & its conservation, awareness & mass education.
Natural resources – renewable, non-renewable, abstract resources, wild wife conservation, pollution control board, Environmental awareness and mass education.

Text Books:

1. Text book of Environmental studies by A.K.Panigrahy & A.Sahu, Sadagrantha Mandir Publishing, Berhampur.

Reference Books:

1. Fundamentals of Ecology by E.P.Odum
2. Environmental Engineering by G.Kiely
3. Fundamentals of Environmental studies by N.K.Tripathy
4. Environmental Biology by P.D.Sharma
5. Ecology & Environment by P.D.Sharma
6. Principles of Environmental Engineering & Science by Davis & Masten
7. Principles of Environmental Science by Cunningham.

Core Paper 1: Office Automation (3-1-0)

Module -1

Learning MS-Word - 20 Hrs

Introduction to Office Automation, Creating & Editing Document, Formatting Document, Autotext, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmarks, Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object, Template.

Module – 2

Learning MS-Excel - 20 Hrs

Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Pivot table & Pivot Chart, Linking and Consolidation, Sorting, Filtering, Table, Validation, Goal Seek, Scenario.

Module – 3

Learning MS-PowerPoint – 10 Hrs

Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.

Books Suggested

1. Microsoft Office – Complete Reference – BPB Publication

2. Learn Microsoft Office – Russell A. Stultz – BPB Publication

Core Paper 2: FUNDAMENTALS OF COMPUTERS (3-1-0)

Module 1 (20 hours)

Computer Basics: A simple model of computers, Digital and Analog Computers, Evolution of digital computers, Major Components of a digital computer, hardware, software, firmware, middleware, freeware. Input/output Devices: Input Devices, Output Devices, Printers, and Plotters, Other forms of Output devices, Input and Output port.

Number System: Decimal Number System, Binary Number System, conversion of numbers(binary to decimal, decimal to binary), Addition of Binary Numbers, 1's complement and 2's complement representation of numbers, Binary Subtraction, Binary Multiplication, Binary Division, Hexadecimal and octal number system, ASCII and ISCII code, EBCDIC code, Gray codes, Fixed point and Floating Point Representation, Overflow and Underflow.

Logic Circuits: Switching circuits, AND/OR operations, NOT operations, Boolean Functions, Canonical Forms of Boolean Functions, Logic circuits.

Module 2 (12 hours)

Processor: CPU organization, Structure of Instruction, A machine level language

Computer Memory: Read only memory, Serial Access memory, Main memory, Secondary memory: Magnetic hard disk, Floppy disk Drives, Compact Disk Read Only memory, Magnetic tape Drives. Computer Architecture: Interconnection of units, Processor to memory communication, I/O to processor communication, Interrupt Structure, Multiprogramming, Processor Features, RISC, Virtual Memory.

Module 3 (18 hours)

Computer Languages: Programming Language, Introduction to Interpreter and compiler, Assembly Language, Higher Level Languages

Operating System: Need of an OS, Batch operating system, multiprogramming Operating system, Time sharing Operating System, personal computer Operating system, on-line and real time system. Computers and Communications: Computer Generations, Types of communications with and among computers, internet and world wide web, characteristics of communication channels, Physical Communication Model, Computer Network topologies, Local Area Network.

Text Book:

1. Fundamentals of Computers, by V.Rajaraman (chapter 1,2,3,4,5,6,7,8,9,10,12,13)

2. **Reference Books:**

1. Computer Fundamentals, by B.Ram
2. Computer Fundamentals by P.K.Sinha
3. Fundamentals Of Information Technology, 2nd Edition, Alexis Leon, Mathew Leon,Vikas Publishing House Pvt Ltd.

OFFICE AUTOMATION LAB (0-0-3)

- Experiments based on Theory.

FUNDAMENTALS OF COMPUTERS LAB (0-0-3)

Experiment 1: Introduction to computer and connectivity of different functional units.
Experiment 2: Identification of various components of a computer and its functions.
Experiment 3: Identification of various power supply units and peripheral units and their functions.
Experiment 4: Hardware Troubleshooting.
Experiment 5: Installation of operating Systems (Windows & Linux)
Experiment 6: Installation of Ms Office, Turbo C and other essential application software in windows.
Experiment 7: Installation of Software in Linux Platform.
Experiment 8: Internet Basics: Browsing, Mailing, Domain Name Systems (DNS)
Experiment 9: Basic DOS commands
Experiment 10: Basic Linux commands

DETAIL SYLLABUS FOR BCA 1ST YEAR UNDER CBCS

Semester: 2

AECC 2: COMMUNICATIVE ENGLISH-1 (2-0-0)

The paper in English is of 100 (Hundred) percentage marks.

MODULE-I: COMMUNICATION SKILL

Communication: Definition, concept

Channels of Communication: Sender, receiver, channel, message, encoding, decoding, context, feedback Verbal & Non-Verbal Communication: Spoken & written-advantages & disadvantages

Bias free English,Formal & informal style.

MODULE-II: COMMUNICATIVE GRAMMAR

Time, Tense & Aspect Verbs of state &

events Modality

Active & Passive voice

Antonyms, Synonyms, Homonyms, one word substitutions & correction of errors

MODULE-III: SOUNDS OF ENGLISH

Length of vowels:

Long vowels as in the words feel, food, shoot, card etc.

Short vowels as in the words pen, sun, cut, shut, etc.

Consonants

Stress pattern

Intonation: Rising & Falling.

Text Books:

Effective technical communication by M.A.Rizvi

Reference Books:

Communicative English & Business Communication by R.K.Panda, J.Khuntia, M.Pati, Alok Publication.

Communicative Grammar of English Geoffery Leech Brush up your English-
S.T.Iman (Bharati Bhavan, Patna)

Core Paper 3: COMPUTER ORGANIZATION AND SYSTEM ARCHITECTURE (3-1-0)

MODULE –I

Basic structures of Computers: Functional units, Bus structures, Computer Architecture vs Computer Organization.

Addressing Methods and Machine Program Sequencing: Memory Locations, Addressing and encoding of information, Main memory operations, Instructions and instruction sequencing, Addressing modes, Assembly language

MODULE –II

Processing Unit: Fundamental concept, Execution of complete instruction, Hardwires control, Performance considerations, Micro programmed control.

Memory: Basic concepts, Semiconductor RAM memories, Read only memories, speed, Size and cost, Cache memories, Performance considerations, Virtual memories, Memory management requirements. Input, Output Organization: Accessing I/O devices, Interrupts, Direct memory access, I/O hardware, Standard I/O interfaces.

MODULE –III

Arithmetic: Number representations, Addition of positive numbers, Design of fast adders, Signed addition and subtraction, Arithmetic and branching conditions, Multiplication of positive numbers, Signed-operand multiplication, Fast multiplication, Integer division, Floating-point numbers and operations.

Text Books:

Books Recommended:

1. V.C. Hamacher, Z.G. Varanesie & S.G. Zaky- Computer Organization, Mc Graw Hill International.

Reference Books

1. M. Mano- Computer System Architecture, Prentice Hall of India
2. J.P. Hayes – Computer Architecture and Organization, Mc Graw Hill International.

Core Paper 4: PROGRAMMING IN 'C' (3-1-0)

MODULE-I

Problem solving techniques: Algorithms, Flow charts, Pseudo codes, Structured programming-sequence, selection and iterations.

Introduction to C: Overview of C, Structure of C program, Character set, Identifiers, Keywords. Constants, Variables Data Types: Size and range of data types, type conversions.

Operators: Arithmetic, relational and logical operators, increment and decrement operators, conditional operator, bit-wise operators, assignment operators, expressions, precedence and order of evaluation. **Managing Input and Output:** I/O functions: printf, scanf, getchar, putchar, gets, puts etc.

MODULE-II

Decision Making and Branching: if, if-else, if-else-if, nested if and switch statements.

Loop Control Structures: while, do-while and for loops. Jumping statements: goto, break, continue, return, and exit.

Arrays: declaration, definition, accessing elements of one dimensional and two-dimensional arrays and applications.

Strings: String Manipulation and String handling functions.

Functions: Types of functions, prototype declaration, definition, parameter passing, recursive functions, storage classes - extern, auto, register, static, scope rules.

MODULE-III

Derived data types: Structures- declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, Union and typedef, bit fields.

Introductions to pointers: Pointer arithmetic, Pointers to arrays, Pointers to functions, Pointers to structures, Self referential Structures. Pointers to pointers, pointers and multidimensional arrays, command line arguments.

File management in C: Input and output, concept of a file, text files and binary files, streams, standard I/O, Formatted I/O, file I/O operations, error handling.

Text Books

1. Byron Gottfried, "Programming with C" TMH Publications
2. Ashok. N. Kamthane," Computer Programming", Pearson Education

Reference Books:

1. E. Balaguruswamy "Programming in C", Tata McGraw Hill-3rd edition
2. B.W. Kernighan & D.M. Ritchie, "C Programming Language", PHI.
3. T Jeyapoovan, A First Course in Programming with C, Vikas Publishing House Pvt Ltd.

COMPUTER ORGANIZATION AND SYSTEM ARCHITECTURE LAB (0-0-3)

1. Study of various components of PC.
2. Detail Study of Keyboard and Mouse.
3. Study Anatomy of SMPS
4. Study Anatomy of Motherboard.
5. Some experiments using CPU trainer kits
6. Some experiments using printer trainer kits
7. Dismantling and assembling a PC.
8. Study Anatomy of BIOS
9. Simulation of multiplication algorithm using C / MATLAB
10. Simulation of simple fundamental units like half adder, full adder, multiplexer, de multiplexer, Arithmetic logic Unit, Simple processor (CPU) etc using VHDL code.

PROGRAMMING IN 'C' LAB (0-0-3)

Experiment No.1

(i) Write a C program to demonstrate different data types in C.

(ii) Write a C program to find the greatest of five numbers using conditional operator.

(iii)Write a C program to perform the arithmetic operations -addition, subtraction, multiplication, and division of integers. Error should be reported, if any attempt is made to divide by zero.

Experiment No.2

(i)Write a C program to generate all odd and even numbers within a specific range.

(ii) Write a C program to find the roots of a given quadratic equation with non-zero coefficients.

(iii) Write a C program to find whether a given integer is prime number or not.

Experiment No.3

(i) Write a program to evaluate the following series. $1+ x/2! + x^2/4! + x^3/6! + x^4/8! + x^5/10!$

(ii) Write a C program to find the roots of a given quadratic equation with non-zero coefficients.

(iii) Write a C program to find whether a given integer is prime number or not.

Experiment No.4

(i) Write a C program to generate and print the first N Fibonacci numbers.

(ii) Write a C program to find factorial of a given number.

(iii) Write C program to check a number is an Armstrong's number or not.

Experiment No.5.

(i) Write a C program to find the GCD and LCM of two given integers.

(ii) Write a C program to reverse a given four-digit number and check whether the number is a palindrome or not.

(iii) Write program to print the following pattern up to desired no. of lines.

```
1
2   3
4   5   6
```

Experiment No.6

(i) Write a C program to find both the largest and smallest number in a list of integers in an array.

(ii) Write a C program to insert a number in a given array.

(iii) Write a C program to delete a number in a given array.

Experiment No.7

(i) Write a C program to find sum and difference of two matrices A and B.

(ii) Write a C program to read two matrices A (M x N) and B (P x Q), and compute the product of A.B after checking compatibility for multiplication.

Experiment No.8

(i) Check Whether Entered string is Palindrome or Not.

(ii) Write a program to sort an array of strings read through the keyboard.

(iii) Write a program to find the no of blank spaces, vowels, words and lines in a paragraph.

Experiment No.9

(i) Write C user defined functions

a. To input N real numbers into single dimension array

b. to compute their mean

c. to compute their variance

d. to compute their standard deviation

Using these functions write a C program to input N real numbers into a single dimension array, compute their mean, variance, and standard deviation.

(ii) Write a C program to read a matrix A (M x N) and compute the following using user defined functions:

a. Sum of the elements of the specified row

b. Sum of the elements of the specified column

c. Sum of all the elements of the matrix

Experiment No.10

(i) Write a program to create a structure for student (with fields Name, IdNo, gender and age).read the details of student and display it.

(ii) Program to create a structure for bank customer (with fields Name, Account No and balance).read the details of N customer details and display it.

(iii) Program to create a structure called Employee having member fields like name, gender and salary. Write a program that accepts the details of employees. Display the employee details who has highest salary. Display all employees in sorted order according to their salary.

Experiment No.11

(i) Write a Program to add two numbers using pointer.

(ii) Program to swap two values by using call by reference

(iii) Write a C program using pointers to read in an array of integers and print its elements in reverse order.

Experiment No.12

(i) Write a C program which copies one file to another.

(ii) Write a C program to reverse the first n character in a file. (NOTE: The file name and n are specified on the command line).