Model Course Content for BCA, Semesters I and II

Semester: I

Course Code: CAC01	**Course Title:** Fundamentals of Computers
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 30
Exam Marks: 70	Exam Duration: 03

Course Outcomes (COs):

- Introduction to computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers
- Operating systems, functions of operating systems, classification of operating systems, kernel, shell, basics of Unix, shell programming, booting
- Databases, why databases are used, users, SQL, data types in SQL, introduction of queries - select, alter, update, delete, truncate, using where, and or in not in
- Internet basics, features, applications, services, internet service providers, domain name system, browsing, email, searching
- Web Programming basics, introduction of HTML and CSS programming
- Introduction of computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers.

Course Content

Content	Hours
Unit - 1	
Fundamentals of Computers: Introduction to Computers - Computer Definition, Characteristics of Computers, Evolution and History of Computers, Types of Computers, Basic Organisation of a Digital Computer; Number Systems – different types, conversion from one number system to another; Computer Codes – BCD, Gray Code, ASCII and Unicode; Boolean Algebra – Boolean Operators with Truth Tables; Types of Software – System Software and Utility Software; Computer Languages - Machine Level, Assembly Level & High Level Languages, Translator Programs – Assembler, Interpreter and Compiler; Planning a Computer Program - Algorithm, Flowchart and Pseudo code with Examples.	10

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Unit-2	
Introduction to computers: Characteristics of computers, Classification of Digital Computer Systems: Microcomputers, Minicomputers, Mainframes, Super computers. Anatomy of Computer: Introduction, Functions & Components of a Computer, Central Processing Unit, Microprocessor, Storage units, Input and output Devices. How CPU and memory works. Program execution with illustrative examples. Introduction to microcontrollers.	8
Unit-3	
Operating System Fundamentals: Operating Systems: Introduction, Functions of an operating System, Classification of Operating Systems, System programs, Application programs, Utilities, The Unix Operating System, Basic Unix commands, Microkernel Based Operating System, Booting.	8
Unit-4	
Introduction to Database Management Systems: Database, DBMS, Why Database -File system vs DBMS, Database applications, Database users, Introduction to SQL, Data types, Classification of SQL-DDL with constraints, DML, DCL, TCL	8
Unit-5	
Internet Basics: Introduction, Features of Internet, Internet application, Services of Internet, Logical and physical addresses, Internet Service Providers, Domain Name System. **Web Basics:** Introduction to web, web browsers, http/https, URL, HTML5, CSS	8

Text Books:

1. Pradeep K. Sinha and Priti Sinha: Computer Fundamentals (Sixth Edition), BPB Publication
2. David Riley and Kenny Hunt, Computational thinking for modern solver, Chapman & Hall/CRC,

Reference:

1. J. Glenn Brook shear," Computer Science: An Overview", Addision-Wesley, Twelfth Edition,
2. R.G. Dromey, "How to solve it by Computer", PHI,

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Course Code: CAC01P	**Course Title: Information Technology Lab**
Course Credits: 02	Hours/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 15
Exam Marks: 35	Exam Duration: 03

Part A: Hardware

1. Identification of the peripherals of a computer, components in a CPU and their functions.
2. Assembling and disassembling the system hardware components of personal computer.
3. Basic Computer Hardware Trouble shooting.
4. LAN and WiFi Basics.
5. Operating System Installation – Windows OS, UNIX/LINUX, Dual Booting.
6. Installation and Uninstallation of Software – Office Tools, Utility Software (like Anti-Virus, System Maintenance tools); Application Software - Like Photo/Image Editors, Audio Recorders/Editors, Video Editors ...); Freeware, Shareware, Payware and Trialware; Internet Browsers, Programming IDEs,
7. System Configuration – BIOS Settings, Registry Editor, MS Config, Task Manager, System Maintenance, Third-party System Maintenance Tools (Similar to CCleaner and Jv16 PowerTools ...)

Part B: Software

1. Activities using Word Processor Software
2. Activities using Spreadsheets Software
3. Activities using Presentation Software
4. Activities involving Multimedia Editing (Images, Video, Audio ...)
5. Tasks involving Internet Browsing
6. Flow charts: Installation and using of flowgarithms software for different arithmetic tasks like sum, average, product, difference, quotient and remainder of given numbers, calculate area of Shapes (Square, Rectangle, Circle and Triangle), arrays and recursion.

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Reference:

1. Computational Thinking for the Modern Problem Solver, By Riley DD, Hunt K.A CRC press, 2014
2. Ferragina P, Luccio F. Computational Thinking: First Algorithms, Then Code. Springer

Web References:

http://www.flowgorithm.org/documentation/

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Activity – 1 from Part A	Write up on the activity/ task	06
	Demonstration of the activity/ task	07
Activity-2 from Part B	Write up on the activity/ task	06
	Demonstration of the activity/ task	07
Viva Voice based on Lab Activities		05
Practical Records		04
Total		**35**

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Course Code: CAC02	**Course Title: Programming in C**
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 30
Exam Marks: 70	Exam Duration: 03

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Confidently operate Desktop Computers to carry out computational tasks
- Understand working of Hardware and Software and the importance of operating systems
- Understand programming languages, number systems, peripheral devices, networking, multimedia and internet concepts
- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays

Course Content

Content	Hours
Unit - 1	
Introduction to C Programming: Overview of C; History and Features of C; Structure of a C Program with Examples; Creating and Executing a C Program; Compilation process in C. **C Programming Basic Concepts:** C Character Set; C tokens - keywords, identifiers, constants, and variables; Data types; Declaration & initialization of variables; Symbolic constants. **Input and output with C:** Formatted I/O functions - *printf* and *scanf*, control stings and escape sequences, output specifications with *printf* functions; Unformatted I/O functions to read and display single character and a string - *getchar, putchar, gets* and *puts* functions.	10
Unit - 2	
C Operators & Expressions: Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Special operators; Operator Precedence and Associatively; Evaluation of arithmetic expressions; Type conversion. **Control Structures:** Decision making Statements - *Simple if, if_else, nested if_else, else_if ladder, Switch Case, goto, break* & *continue* statements; Looping	8

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Statements - Entry controlled and exit controlled statements, *while, do-while, for* loops, Nested loops.	
Unit - 3	
Derived data types in C: Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays - Declaration, Initialization and Memory representation. **Strings:** Declaring & Initializing string variables; String handling functions - *strlen, strcmp, strcpy and strcat;* Character handling functions - *toascii, toupper, tolower, isalpha, isnumeric* etc.	8
Unit - 4	
Pointers in C: Understanding pointers - Declaring and initializing pointers, accessing address and value of variables using pointers; Pointers and Arrays; Pointer Arithmetic; Advantages and disadvantages of using pointers;	8
Unit - 5	
User Defined Functions: Need for user defined functions; Format of C user defined functions; Components of user defined functions - return type, name, parameter list, function body, return statement and function call; Categories of user defined functions - With and without parameters and return type. **User defined data types:** Structures - Structure Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization, comparing structure variables, Array of Structures; Unions - Union definition; difference between Structures and Unions.	8

Text Books:

1. M.T.Somashekara ,Problem Solving with C, 2E, PHI Learning.
2. C: The Complete Reference, By Herbert Schildt.
3. C Programming Language, By Brain W. Kernighan
4. Kernighan & Ritchie: The C Programming Language (PHI)

Reference Books:

1. P. K. Sinha & Priti Sinha: Computer Fundamentals (BPB)
2. E. Balaguruswamy: Programming in ANSI C (TMH)
3. Kamthane: Programming with ANSI and TURBO C (Pearson Education)
4. V. Rajaraman: Programming in C (PHI – EEE)
5. S. Byron Gottfried: Programming with C (TMH)
6. Yashwant Kanitkar: Let us C
7. P.B. Kottur: Programming in C (Sapna Book House)

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Course Code: CAC02P	**Course Title: C Programming Lab**
Course Credits: 02	Hours/Week: 04
Total Contact Hours: 52	Formative Assessment Marks:15
Exam Marks: 35	Exam Duration: 03

Programming Lab

Part A:

1. Program to read radius of a circle and to find area and circumference
2. Program to read three numbers and find the biggest of three
3. Program to demonstrate library functions in math.h
4. Program to check for prime
5. Program to generate n primes
6. Program to read a number, find the sum of the digits, reverse the number and check it for palindrome
7. Program to read numbers from keyboard continuously till the user presses 999 and to find the sum of only positive numbers
8. Program to read percentage of marks and to display appropriate message (Demonstration of else-if ladder)
9. Program to find the roots of quadratic equation (demonstration of switch Case statement)
10. Program to read marks scored by n students and find the average of marks (Demonstration of single dimensional array)
11. Program to remove Duplicate Element in a single dimensional Array
12. Program to perform addition and subtraction of Matrices

Part B:

1. Program to find the length of a string without using built in function
2. Program to demonstrate string functions.
3. Program to demonstrate pointers in C
4. Program to check a number for prime by defining isprime( ) function
5. Program to read, display and to find the trace of a square matrix
6. Program to read, display and add two m x n matrices using functions
7. Program to read, display and multiply two m x n matrices using functions

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8. Program to read a string and to find the number of alphabets, digits, vowels, consonants, spaces and special characters.
9. Program to Reverse a String using Pointer
10. Program to Swap Two Numbers using Pointers
11. Program to demonstrate student structure to read & display records of n students.
12. Program to demonstrate the difference between structure & union.

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program – 1 from Part B	Flowchart / Algorithm	03
	Writing the Program	05
	Execution and Formatting	10
Program -2 from Part B	Flowchart/Algorithm	03
	Writing the Program	05
Viva Voice based on C Programming		05
Practical Record		04
Total		**35**

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Course Code: CAC03(a)	**Course Title:** Mathematical Foundation
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 30
Exam Marks: 70	Exam Duration: 03

Course Outcomes (COs):

- Study and solve problems related to connectives, predicates and quantifiers under different situations.
- Develop basic knowledge of matrices and to solve equations using Cramer's rule.
- Know the concept of Eigen values.
- To develop the knowledge about derivatives and know various applications of differentiation.
- Understand the basic concepts of Mathematical reasoning, set and functions

Content	Hours
Unit - 1	
Basic concepts of set theory: Mathematical logic introduction-statements Connectives-negation, conjunction, disjunction- statement formulas and truth tables- conditional and bi Conditional statements- tautology contradiction- equivalence of formulas-duality law-Predicates and Quantifiers, Arguments.	10
Unit - 2	
Operations on sets: power set- Venn diagram Cartesian product-relations - functions- types of functions - composition of functions.	8
Unit - 3	
Matrix algebra: Introduction-Types of matrices-matrix operations- transpose of a matrix -determinant of matrix - inverse of a matrix- Cramer's rule	8
Unit - 4	
Matrix: finding rank of a matrix - normal form-echelon form cayley Hamilton theorem-Eigen values	8
Unit - 5	
Differential calculus: Functions and limits - Simple Differentiation of Algebraic Functions – Evaluation of First and Second Order Derivatives – Maxima and Minima	8

Text Books:

P. R. Vittal-Business Mathematics and Statistics, Margham Publications, Chennai,

Reference Books:

B. S. Vatsa-Discrete Mathematics –New Age International Limited Publishers, New Delhi

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Course Code: CAC03(b)	**Course Title:** Accountancy
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 30
Exam Marks: 70	Exam Duration: 03

Course Outcomes (COs):

- Study and understand Accounting, systems of Book, Branches of accounting advantage and limitations
- Know the concept of accounting, financial accounting process and Journalization
- Maintenance different account book and reconciliations
- Preparations of different bills, and trial balance.
- Understand the basic concepts of Mathematical reasoning, set and functions

Content	Hours
Unit - 1	
Introduction: History and Development of Accounting, Meaning, Objectives and functions of Accounting, Book keeping V/s Accounting, Users of accounting data, systems of book keeping and accounting, branches of accounting, advantages and limitations of accounting	10
Unit - 2	
Accounting Concepts and Convention: Meaning, need and classification, accounting standards meaning, need and classification of Indian accounting standards. Accounting principles V/s accounting standard Financial Accounting Process: Classification of accounting transactions and accounts, rules of debit and credit as per Double Entry System. Journalization and Ledger posting.	8
Unit - 3	
Preparation of Different Subsidiary Books: Purchase Day book Sales Day Book, Purchase Returns Day Book, Sales Returns Day Book, Cash Book. Bank Reconciliation Statement: Meaning, Causes of Difference, Advantages, Preparation of Bank Reconciliation Statements.	8
Unit - 4	
Account Procedure: Honor of the Bill, Dishonor of the Dill, Endorsement, Discounting, Renewal, Bill for collection, Retirement of the Bill, Accommodation	8

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Bills, Bill Receivable Book and Payable Book. Preparation of Trial Balance: Rectification of errors and Journal Proper	
Unit - 5	
Preparation of Final Accounts: Meaning, need and classification, Preparation of Manufacturing, Trading, Profit and loss account and Balance – Sheet of sale-traders and partnership firms.	8

Text Books:

1. S. Ramesh, B.S. Chandrashekar, A Text Book of Accountancy.
2. V.A. Patil and J.S. Korihalli, Book – keeping and accounting, (R. Chand and Co. Delhi).
3. R. S. Singhal, Principles of Accountancy, (Nageen Prakash pvt. Lit. Meerut).
4. M. B. Kadkol, Book – Keeping and Accountancy, (Renuka Prakashan, Hubil)
5. Vithal, Sharma:Accounting for Management, Macmillan Publishers, Mumbai.

Reference Books:

1. B.S. Raman, Accountancy, (United Publishers, Mangalore).
2. Tulsian, Accouning and Finacial Management – I: Financial Accounting – Person Education.

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OFFICE AUTOMATION

Course Code: CAOE1	**Course Title:** OFFICE AUTOMATION
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 30
Exam Marks: 70	Exam Duration: 03

Course Outcomes (COs):

- Students will be able to create various documents newsletters, brochures, making document using photographs, charts, presentation, documents, drawings and other graphic images.
- To work with the worksheet and presentation software.
- After completion of the course, students would be able to:
- Compare and contrast various types of computers
- Explain the purpose of CPU and how it works
- Describe how information is stored in memory
- Know the basics of computers and prepare documents, spreadsheets, make small presentations with audio, video and graphs and would be acquainted with internet.
- Create, edit, save and print documents with list tables, header, footer, graphic, spellchecker, mail merge and grammar checker
- Attain the knowledge about spreadsheet with formula, macros spell checker etc.

Content	Hours
Unit – 1	
Introduction to Computers, History of computers, Types of computers, Characteristics of computers, Basic Anatomy of a computer, Applications of computer - Input and Output devices - Introduction – inputting text: keyboards, OCR, Bar codes and speech recognition - Inputting graphics- scanners – pointing devices - Output devices – types of screens- CRT- flat panel displays, Printers - Laser Printers, Ink-jet printers - other printers – color printers.	10
Unit - 2	
Memory and Types: Memory types – Main Memory - RAM, ROM, Types of ROMs- PROM, EPROM, EEPROM, Cache memory, virtual memory, buffers - Secondary storage - Diskettes - Hard Disks - Optical Disks - Magnetic Tapes – External Hard Disks, USB Flash Drive.	8

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Unit - 3	
MS-Word -Working with Files – Working with Text – Formatting, Moving, copying and pasting text Styles – Lists – Bulleted and numbered lists, Nested lists, Formatting lists. Table Manipulations. Graphics – Adding clip Art, add an image from a file, editing graphics, Spelling and Grammar, AutoCorrect - Page formatting - Header and footers, page numbers, Protect the Document, Mail Merge, Macros - Creating& Saving web pages, Hyperlinks.	8
Unit - 4	
MS-Excel- Modifying a Worksheet – Moving through cells, adding worksheets, rows and columns Resizing rows and columns, selecting cells, Moving and copying cells, freezing panes - Macros – recording and running. Formatting cells – Formatting toolbar, Dates and times, Auto formatting. Formula and Functions. Linking worksheets - Sorting and Filling, Alternating text and numbers with Auto fill, Auto filling functions. Graphics – Adding clip art, add an image from a file, Charts – Using chart Wizard, Copy a chart to Microsoft Word.	8
Unit – 5	
MS-Power Point -Create a Presentation from a template- Working with Slides – Insert a new slide, applying a design template, changing slide layouts -Slides: Reordering slides, hide slides, Create a Custom slide show. Adding Content – Resizing a text box, Text box properties, delete a text box - Video and Audio effects, Color Schemes & Backgrounds Adding clip art, adding an image from a file, Save as a web page.	8

REFERENCE and TEXT BOOKS:

1. Sanjay Saxena, A First Course in Computers (Based on Windows 8 And MS Office 2013) Vikas Publishing 2015.
2. Jennifer fulton, Sherri Kinkoph, and Joe Kraynak, The Big Basics Book of Microsoft Office 1997, PHI, 1998.
3. Laura Acklen et al, Microsoft Office 97 Professional Essentials,EEE Que E&T, PHI (1998).
4. Andy Channelle, Beginning OpenOffice 3, APress 2009
5. R. Gabriel Gurley, A Conceptual Guide to OpenOffice.Org 2 for Windows and Linux

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Course Code: CASEC-1(A)	**Course Title:** SOFT SKILLS AND PERSONALITY DEVELOPMENT
Course Credits: 02	Hours/Week: 01 hr theory & 02 Hrs Practical
Total Contact Hours:16T+26P	Formative Assessment Marks: 15
Exam Marks: 35	Exam Duration:

Course Outcomes (COs):

- To understand the key concepts of Computer Graphics.
- To introduce the Basic Transformations, Computer Animation and Applications.

Content	Hours
Unit – 1	
Introduction to Soft Skills and Hard Skills, Break the ice berg –FEAR, Self Development - Etiquette and Manners. The Self Concept: Attitude, The process of attitude formation, positive attitude, How to build a success attitude, You are the chief architecture of yourself. Self Management Techniques. Believe in yourself: Self Image and Self Esteem, Building Self Confidence, Environment we mix with, How to build self-image. Meaning and definition of personality, Personal Planning and Success Attitude: Prioritizing, Creating the master plan, Active positive visualization and Spot analysis. Self-Motivation and Communication: Levels of motivation, power of irresistible enthusiasm, etiquettes and manners in a group, public speaking, Importance of listening and responding.	08
Unit - 2	
Motivation Skills & Personality Development, Goal Setting, Career Planning, Resume Building, Psychometric Test, Priority Management & Time Management, Positive Attitude and Self Confidence. Verbal Communication includes Planning, Preparation Delivery, Feedback and assessment of activities like: Public speaking, Group Discussion, Oral Presentation skills, Perfect Interview, Listening and observation skills, body language and use of Presentation aids. Written communication that includes project proposals, brochures, newsletters, articles. Etiquettes that include: etiquettes in social as well as office settings, email etiquettes, telephone etiquettes. Problem Solving and Decision Making Skills, Perceptive, Conceptual, Creative, Analytical and Decisive.	08

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REFERENCE and TEXT BOOKS:

1. Wallace: "Personality Development", 1st Edition, 2008 Cengage Learning India.
2. Richard Denny, "Succeed for your self", Kogan page India, 3rd Edition. www.vivagroupindia.com,
3. John Hoover & Angelo Valenti, "Unleashing Leadership", Jaico publishing House WWW.JAICOBOOKS.COM
4. Kundu, C.L – "Personality development", Sterling Bangalore.
5. Sandra D. Collins, "Listening and Responding", Cengage Learning India, 2nd Edition, 2008.
6. David E. Rye, "1,001 ways to inspire your organization, your team and yourself", Jaico publishing house, Career Press, 1998.

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Course Code: CASEC-1(B)	**Course Title:** Search Engine Optimization(SEO)
Course Credits: 02	Hours/Week: 01 Theory & 02 Hrs Practical
Total Contact Hours: 16T+26P	Formative Assessment Marks: 15
Exam Marks: 35	Exam Duration:

Course Outcomes (COs):

- Define search engine marketing
- Describe the history of search engine marketing.
- Identify the elements or" search engine marketing plan.
- Gencrate ke words that are high1 y relevant to Web site.
- Construct search engine-friendly Web sites.
- Attract inbound Links front other' Weh Sites.

Content	Hours
Unit – 1	
Introduction - SEO, SMO, SEM, WWW, Domain, Google, Yahoo and Bing Local Seo basic tips, tricks and optimization - History Of Search Engines, Seo techniques, B lack, White, Grey Hat SEO, Google Algorithms, Analysis of website, Page Rank (PR) Algorithm Local search	08
Unit - 2	
On page SEO - Content, Keyword Density, Image Optimization, Copywriting, Page title, Meta tags. heading tag, Internal link, footer Optimization, th l structui'e, HTM L/W3C Vh11datir›n. Off page SEO - Page ranking, Directory Submission, Link building, Local business listing, Classifieds posting, Blogging, Social media	08

Text Book:

Search Engine Optimizatlon Book by Aaion Matthew Wall

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