

Subject Code	Subject Name	Hours per Week			Total	Total
		L	T	P	Hrs.	Credits
CA3AE01	English Communication	3	0	0	3	3

Unit-I

Grammar: Applied Grammar and usage, Parts of Speech, Articles, Tenses, Subject-Verb Agreement, Prepositions, Active and Passive Voice, Reported Speech: Direct and Indirect, Sentence Structure, Punctuations, Voices, narration, clauses, modals. (Practical exercises on grammar).

Unit-II

Vocabulary: Using Dictionaries and Thesaurus, Synonyms, Antonyms, Homophones, One Word Substitution, Affixation: Prefixes & Suffixes, Analogies, Sentence Completion, Correctly Spelt Words, Idioms, phrases, Common Errors. Derivation from root words, , Proverbs, Scientific Jargon.
(Practical exercises on vocabulary).

Unit-III

Developing Reading Skills: Reading Comprehension, Process, Active & Passive Reading, Reading Speed Strategies, Benefits of effective reading, Reading comprehension and SQ3R reading technique.
(Practical Reading comprehension).

Unit-IV

Developing Writing Skills : Developing logical paragraphs, art of condensation, précis, essay, Business Correspondence : Business Letters, Parts & Layouts of Business Letters, Writing Resume, E-mails.
(Practical on précis and paragraph writing).

Unit-V

Appreciating Literature: Poetry: The Solitary Reaper - William Wordsworth/Where the mind is without fear - Rabindranath Tagore/ Ozymandias - Percy Bysshe Shelley.
Prose: On Courage – A. G. Gardiner/ On Saying ‘Please’/On Friendship – Francis Bacon. Short stories: Khushwant Singh - The Mark of Vishnu/ The last leaf - O Henry/The Man Who Had No Eyes - MacKinlay Kantor.

Text Books

1. Kumar Sanjay, PushpaLata. English for Effective Communication. Oxford UP. New Delhi.
2. Thompson A.J, A. V. Martinet. A Practical English Grammar. Oxford UP. New Delhi.
3. Bacon Francis. The Essays. Penguin Classics.
4. Singh, Khushwant. The Mark of Vishnu: Stories. Penguin Books.
5. Tagore, Rabindranath. Best of Rabindranath Tagore box set. Srishti Publishers, Oxford University Press

References Books

7. Wren P.C, N.D.V. Prasada Rao. High School English Grammar & Composition. S Chand and Co Pvt Ltd
8. Rai U S, Rai SM. Effective Communication. Himalaya Publishing House.
9. Korlahalli J.S. , Rajendra Pal. Essentials of Business Communication All Courses.Sultan Chand & Sons
10. Krishna Mohan, Sharma R C. Business Correspondence and Report Writing. Mc Graw Hill Education, New Delhi. Fourth Edition.
11. Bovee and Thill. Business Communication Today. Pearson Education
12. Garner Bryan A.. HBR Guide to Better Business Writing. Harvard Business Review Press

Subject Code	Subject Name	Hours per Week			Total	Total
		L	T	P	Hrs.	Credits
CA3CO01	Problem Solving and Programming	3	1	4	8	6

For 2016-19 Batch

Unit-I

Problem Solving Methodology: Problem statement, Analysis, Design a solution, Implement/Coding the solution, Test the solution, Design tools (Algorithm, Flow-chart, Pseudo-code)- Develop algorithms for simple problems.

Programming Languages: Types and generation of programming languages- Compiler – Interpreter-Linker –Loader Execution of Program.

Unit-II

Basics of Language: Character set, Identifier, Keywords, Constants, Data Types, Variables and declaration.

Operators and Expressions: Operator precedence and associativity, Expression Evaluation (Simple Examples), Input and output functions, Simple computational problems involving the above constructs.

Control Statements: Selection, Conditional operator, Iteration (for, while, do-while), Branching (switch, break, continue, goto), Nesting of control statements- Problems using control statements.

Unit-III

Arrays and Strings: 1D and 2D arrays, Searching (Linear and Binary), Sorting (Bubble, Selection), Matrix manipulation programs, Strings and basic operations on strings, Strings functions, Programs on string manipulation.

Functions: Definition, Calling Declaration, Parameter Passing (by value and by reference), Recursion, Library functions, Programs based on functions.

Unit-IV

User defined data types: Structure, Union, Enumerated data type, Programs involving structure and union.

Pointers: Declaration, Initialization, Pointers and arrays, Pointers and structures, Pointers and functions, Command line arguments, Dynamic memory allocation, Operations on pointers, Programs involving the above concepts.

Unit-V

Files: File concept, File pointer, File handling operations (open, close, read, write etc) on sequential and random access files. Programs on file manipulations using fgetc(), fgets(), fseek.

Text Books

1. Herbert Schildt, C: The complete Reference, Fourth Edition, Mc-Graw Hill.
2. **R. Sethi, Programming Language Concepts and Constructs, Pearson Education**
3. V. Rajaraman, Computer Programming in 'C' , PHI.
4. M. Sprankle, Programming and Problem Solving , Pearson Education
5. R.G. Dromey, How to solve it by Computer , Pearson Education.
6. E. Balguruswamy, Programming in ANSI C by, Tata Mc-Graw Hill

References Books

1. Kernighan and Ritchie , The 'C' programming language, PHI
2. Programming With C, Schaum Series.
3. **A. N. Kamthane, Programming with ANSI and Turbo C, Pearson Education**

List of Practicals:

1. Write a program (WAP) for Fibonacci series, Generation of Prime, Sum of Series
2. WAP for Matrix Addition, Subtraction and Multiplication
3. WAP for Sort by Name and Short by Number
4. WAP for Bitwise Operations
5. WAP for Case Conversion, Encoding and Decoding
6. WAP for String Operations
7. WAP for Array of Structures
8. WAP for Make Patterns
9. WAP for Implementation of Structures using Pointers
10. WAP for Pointers to Functions
11. WAP for Pointers to Pointers
12. WAP for Stack using Macros, header - size.h
13. WAP for Case Checking using Macros, Header - checck.h
14. WAP for File Handling

Subject Code	Subject Name	Hours per Week			Total	Total
		L	T	P	Hrs.	Credits
CA3CO01	Problem Solving and Programming	3	1	4	8	6

Revised Syllabus for 2017-20 Batch

Unit-I

Problem Solving Methodology: Problem statement, Analysis, Design a solution, Implement/Coding the solution, Test the solution, Design tools (Algorithm, Flow-chart, Pseudo-code)- Develop algorithms for simple problems.

Programming Languages: Types and generation of programming languages- Compiler – Interpreter-Linker –Loader Execution of Program.

Unit-II

Basics of Language: Character set, Identifier, Keywords, Constants, Data Types, Variables and declaration.

Operators and Expressions: Operator precedence and associativity, Expression Evaluation (Simple Examples), Input and output functions, Simple computational problems involving the above constructs.

Control Statements: Selection, Conditional operator, Iteration (for, while, do-while), Branching (switch, break, continue, goto), Nesting of control statements- Problems using control statements.

Unit-III

Arrays and Strings: 1D and 2D arrays, Strings and basic operations on strings, Strings functions.

Functions: Definition, Calling Declaration, Parameter Passing (by value and by reference), Recursion, Library functions.

Unit-IV

User defined data types:

Structure: Why use structure, declaration of structure, accessing structure elements, how structure elements are stored, array of structure, uses of structure. **Union:** Union definition & declaration, accessing a union member, union of structures, initialization of union member, uses of union, use of user defined data types.

Unit-V

Pointers: Declaration, Initialization, Pointers and arrays, Pointers and structures, Pointers and functions, Command line arguments, Dynamic memory allocation, Operations on pointers.

Introduction to File Handling: File concept, File pointer, File handling operations.

Text Books

1. R.G. Dromey, How to Solve it by Computer, Pearson Education
2. B.W. Kernighan and D. M. Ritchie, The C Programming Language, Pearson Education.
3. B. Gottfried, Programming with C , 2nd Edition, (Indian Adapted Edition), TMH .

References Books

1. H. Schildt C, The Complete Reference, Tata McGraw Hill.
2. E. Balaguruswamy, Programming in C, Tata McGraw Hill.
3. Y. Kanetkar, Let us C, BPB Publications.
4. Practical C Programming, 3rd Edition, A Nutshell Handbook O'Relly.
5. A. N Kamthaneet. al, Computer Programming and IT, Pearson Education, 2011.

List of Practicals:

1. Write a program (WAP) for Fibonacci series, Generation of Prime, Sum of Series
2. WAP for Call by Value & Call by reference.
3. WAP for recursive function.
4. WAP for Library functions.
5. WAP for Bitwise Operations
6. WAP for Case Conversion, Encoding and Decoding
7. WAP for String Operations
8. WAP for Array of Structures
9. WAP for Make Patterns
10. WAP for Implementation of Structures using Pointers.
11. WAP for union.
12. WAP for Pointers to Functions
13. WAP for Pointers to Pointers
14. WAP for File Handling

Subject Code	Subject Name	Hours per Week			Total	Total
		L	T	P	Hrs.	Credits
CA3CO02	Digital Electronics	4	0	0	4	4

For 2016-19 Batch

Unit-I

Logic gates: NOT, AND, OR, Universal gates- NAND, NOR, EX-OR and EX-NOR gates. Diode and Transistor as a switch.

Boolean algebra: Laws of Boolean Algebra, Logic Gates, Simplifications of Boolean equations using K-maps.

Unit-II

Number System : Binary, Octal, Hexadecimal, Conversions from one base to another base, Binary Arithmetic, Unsigned binary number, signed magnitude number, 2's complement representation, 2's complement arithmetic, ASCII Code, BCD Code, EBCDIC Code, Excess3 Code and Gray Code.

Arithmetic Circuits: Adder, Subtractor, Parallel binary adder/Subtractor, binary multiplier and divider.

Combinational Circuits: Multiplexers, Demultiplexers and their use as logic elements, Decoders. Adders/ Subtractors. BCD arithmetic Circuits. Encoders. Decoders / Drivers for display devices..

Unit-III

Flip Flops: S-R- J-K. T. D, Clocked Flip-flop, Race around condition, Master slave Flip-Flop, Realization of one flip-flop using other flip-flop edge triggered- shift registers, sequence generators.

Shift Registers: Serial-in-serial-out, serial-in-parallel-out, parallel-in-serial-out and parallel-in-parallel-out, Bi-directional shift register.

Counters: Asynchronous and Synchronous Ring counters and Johnson Counter, Design of Synchronous and Asynchronous sequential circuits.

Unit-IV

Bipolar logic families: Switching mode operation of p-n junction, bipolar and MOS-devices. TTL, circuits, digital ICs ,74 series, TTL characteristics, Totem-pole and open collector gates, comparison between different type of TTL. MOS and CMOS logic families. Tristate logic. Interfacing of CMOS and TTL families.

A/D and D/A converters : Sample and hold circuit, weighted resistor and R -2 R ladder D/A Converters, specifications for D/A converters. A/D converters: Quantization, parallel-comparator, successive approximation, counting type. Dual-slope ADC, specifications of ADC.

Unit-V

Memory: Memory cell, Primary memory—RAM, ROM , PROM, EPROM, EEPROM, Cache memory, Secondary Memory and its types, Introduction to physical memory and Virtual memory, memory accessing methods : serial and random access.

Text Books:

1. Digital Principles and Applications, Malvino& Leach, McGraw Hill.
2. Digital Integrated Electronics, Taub & Schilling, MGH

References:

1. R.P. Jain , Digital Electronics, McGraw Hill
2. Morris Mano, Digital Design, PHI
3. Gothmann, Digital Electronics, PHI
4. Tocci , Digital System Principle & Application, Pearson Education Asia
5. Donald D Givone, Digital Principles and Design , TMH
6. Thomas C Bartee, Digital Computer Fundamentals, MacGrawhill

Subject Code	Subject Name	Hours per Week			Total	Total
		L	T	P	Hrs.	Credits
CA3CO02	Digital Electronics	4	0	0	4	4

Revised Syllabus for 2017-20 Batch

Unit-I

Number System : Binary, Octal, Hexadecimal, Conversions from one base to another base, Binary Arithmetic, Unsigned binary number, signed magnitude number, 2's complement representation, 2's complement arithmetic.

ASCII Code, BCD Code, EBCDIC Code, Excess3 Code and Gray Code.

Arithmetic Circuits: Adder, Subtractor, Parallel binary adder/ subtractor, Binary multiplier and divider.

Unit-II

Logic gates: NOT, AND, OR, Universal gates- NAND, NOR, EX-OR and EX-NOR gates, Diode and Transistor as a switch.

Boolean algebra: Laws of Boolean algebra, Logic Gates, Simplifications of Boolean equations using K-maps.

Unit-III

Combinational Circuits: Multiplexers, Demultiplexers and their use as logic elements, Decoders. Adders/ Subtractors. BCD arithmetic Circuits, Encoders, Decoders

Flip Flops: S-R- J-K. T. D, Clocked Flip-flop, Race around condition, Master slave Flip-Flop, Realization of one flip-flop using other flip-flop edge triggered- shift registers, sequence generators.

Unit-IV

Shift Registers: Serial-in-serial-out, serial-in-parallel-out, parallel-in-serial-out and parallel-in-parallel-out, Bi-directional shift register.

Counters: Asynchronous and Synchronous Ring counters and Johnson Counter, Design of Synchronous and Asynchronous sequential circuits.

Bipolar logic families: Switching mode operation of p-n junction, bipolar and MOS-devices, TTL, circuits, digital ICs, TTL characteristics, MOS and CMOS logic families, Tristate logic.

A/D and D/A converters: Sample and hold circuit, D/A Converters, A/D converters.

Unit-V

Memory: Memory cell, Primary memory—RAM, ROM , PROM, EPROM, EEPROM, Cache memory, Flash Memory, DDR, Secondary Memory and its types, Introduction to physical memory and Virtual memory, Memory accessing methods: serial and random access.

Text Books:

1. Digital Principles and Applications, Malvino & Leach, McGraw Hill.
2. Digital Integrated Electronics, Taub & Schilling, MGH
3. Thomas C Bartee, Digital Computer Fundamentals, MacGrawhill

References:

1. R.P. Jain , Digital Electronics, McGraw Hill
2. Morris Mano, Digital Design, PHI
3. Gothmann, Digital Electronics, PHI
4. Tocci , Digital System Principle & Application, Pearson Education Asia
5. Donald D Givone, Digital Principles and Design , TMH

Subject Code	Subject Name	Hours per Week			Total	Total
		L	T	P	Hrs.	Credits
CA3CO03	Computer Fundamentals	4	0	0	4	4

Unit-I

Introduction to Information Technology: Information concepts & Processing: Basic concepts of IT, data Processing, data and information. Elements of computer system: Classification, history and types of computers. Hardware: CPU, Memory unit, I/O devices, auxiliary storage devices, data representation Software: System and Application s/w and utility packages.

Unit-II

Operating System: Introduction, Basic functions of OS, Classification of OS. Client server systems, Computer networks, network protocols, LAN, WAN, Internet facilities through WWW, scripting languages, communication channels, factors affecting communication among devices.

Unit-III

Introduction to viruses, worms, malware, Trojans, Spyware and Anti-Spyware Software, Different types of attacks like Money Laundering, Information Theft, Cyber Pornography, Email spoofing, Denial of Service (DoS), Cyber Stalking, Hacking Spamming, Cyber Defamation, Security measures Firewall, Computer Ethics & Good Practices.

Unit-IV

Data base Management System Introduction, File oriented approach and Database approach, Data Models, Architecture of Database System, Data dictionary, DBA

Unit-V

Cloud computing definition, cloud infrastructure, cloud segments or service delivery models (IaaS, PaaS and SaaS), cloud deployment models/ types of cloud (public, private, community and hybrid clouds), Pros and Cons of cloud computing.

Text Books:

4. E Balagurusamy, Fundamentals of Computers , TMH
5. Silakari and Shukla, Basic Computer Engineering, Wiley India
6. V Rajaraman, Fundamentals of Computers ,PHI

References:

1. Sanders, D.H. , Computers Today, McGraw Hill
2. Prof. Vikram Singh, Impact of Information & Communication Technology on public life, Lakshmi Publications.
3. Galvin P., J.L. Abraham Silberschatz. Operating System Concepts, John Wiley & Sons Company
4. Elmasri &Navathe ,Fundamentals of Database systems.
5. Buyya, Selvi , Mastering Cloud Computing, TMH Pub.

Subject Code	Subject Name	Hours per Week			Total	Total
		L	T	P	Hrs.	Credits
CA3CO04	Mathematics-I	3	1	0	4	4

Unit-I

Propositional Logic: Proposition, logical operators: conjunction, disjunction, negation, conditional and bi-conditional operators, converse, inverse, contrapositive, logically equivalent, tautology and contradiction, arguments and validity of arguments.

Unit-II

Set Theory: Sets and their representations, types of sets, operations on sets, Venn diagrams, algebra on sets, De- Morgan's laws and Cartesian product, practical problems based on sets.

Unit-III

Relation and Function: Relation: Definition, types of relations, composition of relation, representation of relations, Function: Definition, Types of functions, some important functions (identity, constant, absolute, greatest integer function, floor and ceiling, even and odd, characteristic, remainder, signum and hash functions) classification of function: Algebraic function (polynomial-linear, quadratic and rational) and transcendental function (exponential, logarithmic and trigonometric function with identities).

Unit-IV

Limit, Continuity and Differentiability: Limit at a point, properties of limit, computation of limits of various types of functions, continuity at a point, continuity over an interval, types of discontinuities, derivative, derivatives of sum, differences, product and quotient, chain rule, derivative of composite functions.

Unit-V

Matrices: Definition, rank of a matrix, solution of simultaneous equations by elementary transformation method, consistency and inconsistency of equations, eigen values and eigen vectors of a matrix, Cayley-Hamilton theorem.

Text Books:

1. Kenneth A. Ross and Charles R.B. Wright, Discrete Mathematics, Pearson, Fifth edition.
2. Andrew Simpson, Discrete Mathematics by Example, Tata McGraw Hill Education Pvt. Limited.
3. D.P. Acharja, Shee Kumar Fundamental approach to discrete mathematics, New age international pub

References:

1. Ivo Duntsch, Gunther Gediga, Methodos Primers I: Sets, Relations, Functions, Methodos Publishers
2. George B. Thomas & Ross L. Finney, Calculus and Analytic Geometry, Pearson.
3. Jacob T. Schwartz, Introduction to Matrices and Vectors, Dover Publications.
4. Frank Ayres, Jr, Theory and Problems of Matrices SI (Metric) edition, McGraw Hill.
5. B.S. Grewal, Elementary Engineering Mathematics, Khanna Publishers.
6. HK Dass, Advanced Engineering Mathematics, S Chand & Co
7. Shanti Narayan, Differential Calculus, S Chand & Company.

Subject Code	Subject Name	Hours per Week			Total	Total
		L	T	P	Hrs.	Credits
CA3EG01	Office Automation	2	0	4	6	4

Unit-I

Windows: Introduction to Windows, Features of Windows, Various versions of Windows & its use, Working with Windows, My Computer & Recycle bin , Desktop, Icons and Windows Explorer, Screen description & working styles of Windows, Dialog Boxes & Toolbars, Working with Files & Folders, Operations on Files and Folders, Shortcuts & Auto starts, Accessories and Windows Settings, Using Control Panel- Setting common devices using control panel, creating users, internet settings, Start button & Program lists, Installing and Uninstalling new Hardware & Software program on your computer.

Unit-II

Office Packages: Office activates and their software requirements, Word-processing, Spreadsheet, Presentation graphics, Database, introduction and comparison of various office suites like MS-Office, Lotus-Office, Star-Office, Open-Office, Word-processing Basics Features & area of use. Working with Word-processing, Menus & Commands, Toolbars & Buttons, Shortcut Menus, Wizard & 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.

Unit-III

Advanced Features of Word-processing: Spell Check, Thesaurus, Find & Replace; Headers & Footers, Inserting Page Numbers, Pictures, Files, Auto texts, Symbols, 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.

Unit-IV

Spreadsheet : Introduction and area of use, Working with Spreadsheet, concepts of Workbook & 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.

Unit-V

Presentation tools : Introduction & area of use, working with Presentation tool, Creating a New Presentation, Working with Presentation, Using Wizards, Slides & its different views, Inserting, Deleting and Copying of Slides, 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 and handouts with print options. Outlook Express, Features and uses. Database Basics: Databases, Records Fields, data types, Starting Up Microsoft Access, Creating New, and Opening Existing Databases, Creating a database using a wizard and Creating a database without using a wizard, Tables , What they are and how they work, Create a table from scratch in Design view, Primary Keys, Switching Views, Entering Data, Manipulating Data. Intranet tools: E-mail: Anatomy of e-mail, e-mail address, adding signature, attaching files, opening attachments, managing e-mail account, Web mail.

Text Books:

1. Prof. James Steinberg, Open office basic: An introduction, Gold Turtle Publication.
2. Windows XP complete reference. BPB publications
3. Joe Habraken, Microsoft Office 2000, 8 in 1, Prentice Hall

References:

1. Jean Hollis Weber, Designing with LibreOffice,.
2. LibreOffice 4.0 Impress Guide, Friends of OpenDocuments, Inc.
3. Ms office XP complete BPB publication
4. Ms windows XP home edition complete, BPB publication.
5. Mansoor, IT tools and applications, ,pragya publications, matura professional office procedure by susan h Cooperman.