



Subject Name	L	T	P	Credits
Programming in C Lab	0	0	4	2

### Course Objectives

- The course aims to provide exposure to problem-solving through programming.
- It aims to train the student to the basic concepts of the C-programming language.
- This course involves a lab component which is designed to give the student hands-on experience with the concepts.
- Illustrate the flowchart and design an algorithm for a given problem and to develop C programs using operators.
- Develop conditional and iterative statements to write C programs

### Unit I

History of C; Structure of a C program, Data types; Constant & Variable; Operators & expressions; Control Constructs – if-else, for, while, do-while; Case statement;

### Unit II

Arrays; Formatted & unformatted I/O; Type modifiers & Storage classes; Ternary operator; Type conversion & type casting; Priority & associativity of operators.

### Unit III

Functions; Arguments; Return value; Parameter passing – call by value, call by reference; Return statement; Scope, visibility and life time rules for various types of variables, static variable; Calling a function;

### Unit IV

Recursion – basics, comparison with iteration, tail recursion, when to avoid recursion examples, Special constructs – Break, continue, exit (), String and its functions.

### Unit V

Pointers - & and \* operators, dynamic memory management functions like malloc (), calloc(), free(); Structure – basic, declaration, membership operator, pointer to structure, referential operator, self-referential structures,

### Reference Books:

1. Kerninghan & Richie: The C Programming language, PHI
2. Kanetkar Y: Let us C
3. Fundamentals Of Data Structure, By S. Sawhney & E. Horowitz

### Course Outcomes:

- Identify situations where computational methods and computers would be useful.
- Given a computational problem, identify and abstract the programming task involved.

- Approach the programming tasks using techniques learned and write pseudo-code.
- Choose the right data representation formats based on the requirements of the problem.
- Exercise files concept to show input and output of files in C
- Understand basic Structure of the C-PROGRAMMING, declaration and usage of variables
- Exercise conditional and iterative statements to Write C programs

### List of Experiments

1. Write a program for simple arithmetic operations.
2. Write a program for finding greatest number among two numbers.
3. Write a program for the greatest number among the three numbers.
4. Write a program for finding an even or odd number.
5. Write a program for finding leap year.
6. Write a program to swap two numbers using a third variable.
7. Write a program to swap two numbers using a third variable.
8. Write a program for printing of table which is given by the user.
9. Write a program for printing of table with valid condition.
10. Write a program to print in \* in the pattern pyramid.
11. Write a program to print binary number (0, 1) in pyramid pattern.
12. Write a program to find the largest number among two numbers using ternary operator.
13. Write a program to check given number is prime or not.
14. Write a program to generate the Fibonacci series.
15. Write a program for finding sum & average of array element.
16. Write a program to calculate the area of giving the shapes: 1. Circle 2. Triangle 3. Rectangle 4. Square using switch case statement.
17. Write a program to swap two numbers using a third variable to function.
18. Write a program to swap two numbers without using a third variable to function.
19. Write a program for triangle to the given pattern

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20. Write a program for pyramid to the given pattern

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\* \* \*

\* \* \* \*

21. Write a program for finding reverse number which is given by the user.
22. Write a program for finding the sum of the given number.
23. Write a program to find even or odd number using functions.
24. Write a program to find largest and smallest element from an array.
25. Write a program for finding the sum of two matrices.
26. Write a program for finding the factorial number.
27. Write a program finding factorial using recursion.
28. Write a program finding power of a given number using recursion.
29. Write a program of special constructs using continue.
30. Write a program of special constructs using break.
31. Write a program to store information of student using structure.
32. Write a program to find the address of a variable using pointer variable.
33. Write a program finding power of a given number.
34. Write a program to connect two strings using string function.
35. Write a program to compare one string to another string using string function.
36. Write a program to calculate the length of string using string function.
37. Write a program to copy one string to another string using string function.
38. Write a program to copy one string to another string without string function.
39. Write a program to calculate the area of a circle using the macro function.
40. Write a program to include user defined header file in C Program.
41. Write a program to check macros which is defined or not in the program
42. Write a program to a read one character from the file using file function.
43. Write a program to a write one character to the file using file function.
44. Write a program to append one character to the file using file function.
45. Write a program to read numbers and characters from the file using file function.
46. Write a program to write numbers and characters to the file using file function.

47. Write a program to append numbers and characters to the file using file function.

**B.C.A.  
Semester-I**

L-4 T-0 P-0 C-4

**S1-BCAA1T: Computer Fundamentals, Organization  
and Architecture**

**Course Objectives**

**Course Outcomes (COs)**

- Understand the basic structure; Operation and Characteristics of digital Computer.
- Design simple combinational digital circuit based on given parameters
- Understand the Working of arithmetic and logic unit.
- Know about hierarchical memory system including cache memories and virtual memory.
- Know the contributions of Indians in the field of Computer architecture and related technologies.

**Articulation Matrix**

CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1								
CO2								
CO3								
CO4								
CO5								

High-3 Medium-2 Low-1

**Unit-I**

**12 Hours**

**Fundamentals of computers:** Definition, Characteristics, capabilities and limitations. Types of Computers: Analog, Digital, Micro, Mini, Mainframe & Super Computers, Work Station, Server computers. Generations of Computers.

**Smart Systems:** definition, characteristics and applications Definition of Embedded system, GIS, GPS, Cloud Computing Uses of computers in e- governance and various public domains and services. Block diagrams of computer and its functional units. Concept of hardware, software and firmware. Types of software.

**Input devices:** keyboard, scanner, mouse, light pen, bar code reader, OMR, OCR, MICR, track ball, joystick, touch screen camera, mice etc.

**Output devices:** monitors classification of monitors based on technology -CRT & flat panel, LCD, LED monitors, speakers, printers dot matrix printer, ink jet printer, laser printer, 3D Printers, Wi-Fi enabled printers, plots and their types, LCD/LED projectors.

**Computer memory and its types,** Storage devices Magnetic tapes. Floppy Disks, Hard Disks, Compact Disc CD-ROM, CD-RW, VCD, DVD, DVD-RW, USB drives, Blue Ray Disc, SD/MMC Memory cards.

**Unit-II**

**12 Hours**

**Fundamentals of Digital Electronics:** Data Types, Complements, Fixed-Point

Representation. Floating-Point Representation, Binary and other Codes, Error Detection Codes. Logic Gates, Boolean Algebra, Map Simplification, Combinational Circuits, Sequential Circuits, simple combinational circuit design problems.

**Combinational Circuits:** Adder, Subtractor, Multiplexer, Demultiplexer, Decoders, Encoders. **Sequential Circuits:** Flip-Flops, Registers, Counters.

### Unit-III

**12 Hours**

**Basic Computer Organization:** Instruction codes, Computer Registers, Computer Instructions, Timing & Control, Instruction Cycle, Memory Reference Instruction, and Input Output & Interrupts. Instruction formats, Addressing modes, Instruction codes, Machine language, Assembly language.

**Register Transfer and Micro operations:** Register Transfer Language Register Transfer, Bus & Memory Transfer, Arithmetic Micro Operations, Logic Micro-operations, Shift Micro-operations

### Unit-IV

**12 Hours**

**Processor and Control Unit:** Hardwired vs. Micro programmed Control Unit, General Register Organization, Stack Organization, and Instruction Format. Data Transfer & Manipulation, Program Control, Introductory concept of RISC, CISC, advantages and disadvantages of both.

**Pipelining:** Concept of pipelining, introduction to Pipelined data path and control- Handling Data hazards & Control hazards

### Unit-V

**12 Hours**

**Memory and I/O Systems:** Peripheral Devices, I/O Interface, **Data Transfer Schemes-** Program Control, Interrupt, DMA Transfer, I/O Processor. **Memory Hierarchy,** Processor vs. Memory Speed, High Speed Memories, Main memory & its types. Auxiliary memory, Cache Memory, Associative Memory, Interleaving, concept of Virtual Memory. Hardware support for Memory Management.

**Total 60 Hours**

### Text Book

- M. Morris Mano, Digital Design, 3.ed. Prentice Hall of India Pvt. Ltd.,
- Heuring Jordan, "Computer System Design & Architecture" (A.W.L.)

### Reference Books:

- William Stalling, "Computer Organization & Architecture", Pearson Education Asia.
- V. Carl Hamacher, "Computer Organization", TMH
- Tannenbaum, "Structured Computer Organization", PHI.

**B.C.A.**  
**Semester-I**

L-0 T-0 P-4 C-2

**S1-BCAA1P: Computer Fundamentals and Digital Lab**

**Course Objectives**

**Course Outcomes (COs)**

- Familiarity with parts of the computer and peripheral devices used with the computer.
- Realization of the basic logic and universal gates.
- Verify the behavior of logic gates using truth tables. Implement Binary-to -Gray, Gray-to -Binary code conversions.
- Design half and full adder circuit using basic gates. Design and construct flip flops and verify the excitation tables.

**Articulation Matrix**

<b>CO/PO/PSO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PSO1</b>	<b>PSO2</b>
<b>CO1</b>								
<b>CO2</b>								
<b>CO3</b>								
<b>CO4</b>								
<b>CO5</b>								

High-3 Medium-2 Low-1

**Suggestive List of Praticals**

**I. Computer Fundamentals:**

- a) Identify various parts of the computer by physical examination.
- b) Identify various parts inside the CPU like motherboard, SMPS, ports, buses, IC chips, Processor, HDD, and RAM etc.
- c) Identify various I/O devices available in the lab physically.

**II. Digital Electronics:**

- a) Verification and interpretation of truth table for AND, OR, NOT gates
- b) Verification and interpretation of truth table for NAND, NOR gates
- c) Verification and interpretation of truth table for Ex-OR, Ex-NOR gates
- d) Study of half adder using XOR and NAND gates and verification of its operation.

- e) Study of full adder using XOR and NAND gates and verification of its operation.
- f) Study of half subtractor and verification of its operation.
- g) Study of full subtractor and verification of its operation
- h) Realization of logic functions with the help of NAND – Universal Gates.
- i) Realization of logic functions with the help of NOR -Universal Gates
- j) Verify the truth table of RSflip-flops using NAND and NOR gates.
- k) Verify the truth table of JKflip-flops using NAND and NOR gates
- l) Verify the truth table of T and D flip-flops using NAND and NOR gates.
- m) Implementation of 4x1 multiplexer using logic gates.
- n) Implementation of 1x4 demultiplexer using logic gates.
- o) Verify Gray to Binary conversion using NAND gates only.
- p) Verify Gray to Binary conversion using NAND gates only.

**Total 30 Hours**



**B.C.A.**  
**Semester-I**

L-4 T-0 P-0 C-4

**S1-BCAB2T: Operating System**

**Course Objectives**

**Course Outcomes (COs)**

- Describe the importance of computer system resources and the role of operating system in their management policies and algorithms.
- Specify objectives of modern operating systems and describe how operating systems have evolved over time.
- Understand various process management concepts and can compare various scheduling techniques, synchronization, and deadlocks.
- Describe the concepts of memory management techniques.
- Identify the best suited process management technique for any process.
- Describe various file operations, file allocation methods and disk space management.
- To understand and identify potential threats to operating systems and the security features to guard against them.
- Learn to operate the Linux system

**Articulation Matrix**

CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1								
CO2								
CO3								
CO4								
CO5								

High-3 Medium-2 Low-1

**Unit-I**

**12 Hours**

**Introduction to Operating System:** What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems— Batch Systems, Multiprogramming Systems, Multiprocessing Systems, Time Sharing Systems, Distributed OS, Real time systems.

Operating System for Personal Computers, Workstations and Hand-held Devices.

Applications of various operating system in real world. Some prevalent operating systems - Windows, UNIX/Linux, Android, MacOS, Blackberry OS, Symbian, Bada etc.

**Unit-II**

**12 Hours**

**Process Management:** Process Concepts, Process states & Process Control Block.

**Process Scheduling:** Scheduling Criteria, Scheduling Algorithms (Preemptive & Non-Preemptive FCFS, SJF, SRTN, RR, Priori Multiple-Processor, Real-Time, Multilevel Queue

and Multilevel Feedback Queue Scheduling.

**Deadlock** - Definition, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock.

**Deadlock Handling Approaches:** Prevention, Avoidance, Detection and Recovery

### **Unit-III**

**12 Hours**

**Memory Management:** Introduction, Address Binding, Logical versus Physical Address Space, Swapping, Contiguous & Non-Contiguous Allocation, Fragmentation (Internal & External), Compaction, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement Algorithms.

**File Management:** Concept of File System (File Attributes, Operations, Types), Functions of File System, Types of File System, Access Methods (Sequential, Direct & other methods), Directory Structure (Single-Level, Two-Level, Tree-Structured, Acyclic-Graph, General Graph), Allocation Methods (Contiguous, Linked, Indexed)

### **Unit-IV**

**12 Hours**

**Disk Management:** Structure, Disk Scheduling Algorithms (FCFS, SSTF, SCAN, C-SCAN, LOOK), swap space Management, Disk Reliability, Recovery.

**Security:** Security Threats, Security policy mechanism, Protection, Trusted Systems, Authentication and Internal Access Authorization, Windows Security

### **Unit-V**

**12 Hours**

**LINUX:** Introduction, History and features of Linux, advantages, hardware requirements for installation, Linux architecture, file system of Linux - boot block, super block, inode table, data blocks.

Linux standard directories, Linux kernel, Partitioning the hard drive for Linux, installing the Linux system, system - startup and shut-down process, init and run levels. Process, Swap, Partition, fdisk, checking disk free spaces. Difference between CLI OS & GUI OS, Windows v/s Linux, Importance of Linux Kernel, Files and Directories. Concept of Open-Source Software.

**Total: 60 Hours**

### **Textbooks:**

- A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications.
- A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education.
- Operating System by Peterson
- Linux by Sumitabh Das

### **Reference Books:**

- G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education.
- W. Stallings, Operating Systems, Internals & Design Principles, 8th Edition, Pearson Education.

- M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill.
- Operating System design and Concepts by Milan Milenkovic.

**B.C.A.  
Semester-I**

L-0 T-0 P-4 C-2

**S1-BCAB2P: Operating System Lab**

**Course Objectives**

**Course Outcomes (COs)**

- Operate the Linux system.
- Do administration
- Use Vi Editor

**Articulation Matrix**

CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1								
CO2								
CO3								
CO4								
CO5								

**Linux:**

- Linux Directory Commands:** pwd, mkdir, rm -rf, ls, cd, cd /, cd
- Linux File Commands:** touch, cat, cat >, cat >>, rm, cp, mv, rename
- Linux Permission Commands:** su, id, useradd, passwd, groupadd, chmod, groupdel, chown, chgrp

- d) **Linux File Content & Filter Commands:** head, tail, tac, more, less, grep, cat, cut, grep, comm, sed, tee, tr, uniq, wc, od, sort, diff.
- e) **Linux Utility Commands:** find, bc, locate, date, cal, sleep, time, df, mount, exit, clear, gzip, gunzip.
- f) **Linux Networking Commands:** ip, ssh, mail, ping, host
- g) **Edit Crontab file:** to wall message on system on particular time automatically.
- h) **Vi editor:** Create file, edit, save and quit. Highlighting the searched term within a file. cut, yank, undo.

**Total: 30 Hours**

**Textbooks:**

- Linux by Sumitabh Das
- Linux Bible

**B.C.A.  
Semester-I**

L-3 T-0 P-0 C-3

**S1-COAP2G: M. S. Office**

**Course Objectives**

**Course Outcomes (COs)**

- To Create and manage professional documents using word.
- Analyze, manage and present data using excel.
- Create and manage presentation using power point.
- To insert a table, picture, or drawing into the document.
- To prepare the document to be sent as a circular letter.

**Articulation Matrix**

<b>CO/PO/PSO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PSO1</b>	<b>PSO2</b>
<b>CO1</b>								
<b>CO2</b>								
<b>CO3</b>								
<b>CO4</b>								
<b>CO5</b>								

High-3 Medium-2 Low-1

**Unit-I**

**9 Hours**

MS Word: Introduction, Features & area of use. Working with MS word: Ribbon tabs-Home, Insert, Page Layout, References, Mailings, Review and View, using word to create a new document, open, save and print a document, edit and format text, change the page layout, background and borders, insert headers and footers, insert and edit tables, insert clip art and pictures to documents. Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Border and Colors, Inserting Header and Footer, Using Date and Time option in Word. Creating project abstract Features to be covered: -Formatting Styles, inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Trac Changes

**Unit-II**

**9 Hours**

creating a Newsletter: Features to be covered: - Table of Content, newspaper columns, Images from files and clipart, drawing toolbar and word Art, Formatting Images, Textboxes and Paragraphs creating a Feedback form - Features to be covered- Forms, Text Fields, inserting objects

Mail Merge creating custom document, creating main document, creating data source, editing data source, opening a data source, sorting the data source, finding a record in data source, editing main document, sorting merged documents, filtering merged documents, printing merge documents, merging onto letterhead, using different data sources with single main document.

**Unit-III**

**9 Hours**

**Excel** : Introduction to Excel interface Understanding rows and columns, Naming Cells, Working with excel workbook and sheet formatting excel work book, New, Open, Close,

Save, Save As formatting Text: Font Size, Font Style, Font Color, Use the Bold, Italic, and Underline Wrap text, Merge and Centre Currency, Accounting and other formats, Modifying Columns, Rows & Cells, Perform Calculations with Functions, Creating Simple Formulas Setting up your own formula, Date and Time Functions, Financial Functions Logical Functions, lookup and Reference, Functions

**Calculations** - Features to be covered: - Cell Referencing, Formulae excel -average, standard deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, Mathematical Functions, Statistical Functions, Text Functions. Sort and Filter Data with Excel Sort and filtering data Using number filter, Text filter, Custom filtering, removing filters from columns, Conditional formatting

#### **Unit-IV**

**9 Hours**

create Effective Charts to Present Data Visually Inserting Column, Pie chart etc. Create an effective chart with Chart Tool, Design, Format, and Layout options, adding chart title, changing layouts, Chart styles, editing chart data range Editing data series, Protecting and Sharing the work book Protecting a workbook with a password, allow user to edit ranges, Track changes, Working with Comments. insert Excel Objects and Charts in Word, Use Macros to Automate Tasks Creating and Recording Macros, Assigning Macros to the work sheets, Saving Macro enabled workbook.

**performance Analysis** - Features to be covered: - Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, conditional formatting **Cricket Score Card creation** - Features to be covered: -Pivot Tables, Interactive Buttons, Importing Data, Data protection, Data Validation

#### **Unit-V**

**9 Hours**

**Creating PowerPoint Presentations:** Making presentation which demonstrate use of Hyperlinks, inserting —Images, Clip Art, Audio video, Objects, Tables and Charts create Master Layouts (slide, template, and notes), Types of view (basic, presentation, slide slotter, notes etc.), Inserting — Background, textures, Design Templates, Hidden slides. Auto content wizard, Slide transition, Custom Animation, Auto Rehearsing

**Total 45 Hours**

#### **Reference Books:**

- Microsoft Office 97: Will Train, Gini Courter, Annette Marqui, BPB Publication.
- MS Office 2000 for Everyone: Saxena Sanjay, s schnd
- Writer's Guide to Microsoft Word: Kari Holloway
- Access 2016 Bible: Michael Alexander, Richard Kusleika
- Excel 2019: Greg Harvey Microsoft Powerpoint Made Easy: Chris Smith

**B.C.A.  
Semester-I**

L-0 T-0 P-2 C-1

**S1-COAP2R: M. S. Office (Practical)**

**Course Objectives**

**Course Outcomes (COs)**

- To use keyboard shortcuts to perform tasks.
- To create a new document, open, save and print a document. To edit and format text, change the page layout, background and borders.
- To modify power point custom template presentation.
- To insert clip art and pictures to documents.
- To navigate the start menu to locate programs, files, and settings & create files and folders.
- To create a word document with customized template.

**Articulation Matrix**

<b>CO/PO/PSO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PSO1</b>	<b>PSO2</b>
<b>CO1</b>								
<b>CO2</b>								
<b>CO3</b>								
<b>CO4</b>								
<b>CO5</b>								

**List of Practical**

1. Create a document and apply different formatting options.
2. Design a Greeting Card using Word Art for different festivals.
3. Create your Bio-data and use page borders and shading.
4. Create a document and insert header and footer, page title etc.
5. To create a document, set the margins, orientation, size, column, water mark, page color and page borders.
6. Insert a table into the document. Prepare a mark sheet of your class subjects.
7. Apply the creating, editing, saving, printing securing & protecting operations to an excel spreadsheets.

8. Prepare a bar chart & pie chart for analysis of five-year results of your institute.
9. Work on the following exercise on a Workbook:
  - a. Copy an existing Sheet
  - b. Rename the old Sheet
  - c. Insert a new Sheet into an existing Workbook
  - d. Delete the renamed Sheet.
10. Prepare an Attendance sheet of 10 students for any 6 subjects of your syllabus.  
Calculate their total attendance, total percentage of attendance of each student & average of attendance.
11. Create a worksheet on Students list of any 4 faculties and perform following database functions on it.
  - a. Sort data by Name
  - b. Filter data by Class
  - c. Subtotal of no. of students by Class.
12. Apply themes and layouts to power point slides and insert pictures, graphics, shapes, and tables into presentations.
13. In power point slide make use of adding transitions and animation & working with master slides.
14. Create a excel worksheet and perform computations using available data and using mathematical functions chosen from menus.

**Total 15 Hours**

**Reference Books:**

- Microsoft Office 97: Will Train, Gini Courter, Annette Marqui, BPB Publication.
- MS Office 2000 for Everyone: Saxena Sanjay, s schnd
- Writer's Guide to Microsoft Word: Kari Holloway
- Access 2016 Bible: Michael Alexander, Richard Kusleika
- Excel 2019: Greg Harvey Microsoft Powerpoint Made Easy: Chris Smith



**B.C.A.  
Semester-I**

L-2 T-0 P-0 C-2

**X1-FCHB1T: English**

**Course Objectives**

**Course Outcomes (COs)**

**Articulation Matrix**

CO/PO/PSO	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2
CO1								
CO2								
CO3								
CO4								
CO5								

High-3 Medium-2 Low-1

**Unit-I**

**10 Hours**

**Reading, Writing and Interpretation Skills:**

1. Where The Mind is Without Fear- Rabindranath Tagore (Key Word: Patriotism]
2. National Education - M. K. Gandhi (Key Word: Edification]
3. The Axe- R.K Narayan [Key Word: Environment]
4. The Wonder That Was India- A.L Basham (an excerpt) [Key Word: Indianness]
5. Preface to the Mahabharata C. Rajagopalachari [Key Word: Indian Mythology]

**Unit-II**

**10 Hours**

**Comprehension Skill:**

Unseen Passage followed by Multiple choice questions

**Unit-III**

**10 Hours**

**Basic Language Skills 1:** Vocabulary Building: Suffix, Prefix, Synonyms, Antonyms, Homophones, Homonyms and One-word substitution.

**2: Basic Grammar:** Noun, Pronoun, Adjective, Verb, Adverb, Prepositions, Articles, Time and Tense

**Total 30 Hours**

**Reference Books:**

- Essential English Grammar-Raymond<sup>1</sup> Murphy, Cambridge University Press.
- Practical English Grammar Exercises 1- A. J. Thomson & A. V. Martinet, Oxford India.
- Practical English Usage - Michael Swan, Oxford
- English Grammar in Use - Raymond Murphy, Cambridge University Press.