YEAR-WISE AND SEMESTER-WISE DISTRIBUTION OF SUBJECTS
DEPARTMENT OF B.Sc. COMPUTER SCIENCE AND ENGINEERING
FIRST SEMESTER
ACADEMIC YEAR 2025-26 OF 2025-28 BATCH (CBCS)

Sl. No.	Part	Subject Code	Title of the Subject	Hours /Week	Duration of Exam (hrs.)	Marks			Credits
						Internal	External	Total	
1	I	EN23101	General English-I (AECC-1)	3	3	40	60	100	3
2	I	VE18101	Value Education and Personality Development (AECC-2)	2	3	40	60	100	2
3	II	BS25102	Digital Logic and Design and Computer Organization (DSC-1)	4	3	40	60	100	4
4	II	BS25101	Differential Equations and Elementary Number Theory (DSC-2)	5	3	40	60	100	4
5	II	BS22101	Operating systems (DSC-3)	5	3	40	60	100	4
6	II	BS24104	Problem Solving and Programming in C (DSC-4)	5	3	40	60	100	4
PRACTICALS									
7	II	CS25103	Digital Logic and Design and (DSC-1)	2	3	40	60	100	1
8	II	CS25105	Unix Shell Programming (DSC-3)	2	3	40	60	100	1
9	II	CS25124	C Programming (DSC-4)	2	3	40	60	100	1
	Total			**30**	**-**	360	540	900	**24**

*Ability Enhancement Compulsory Course (AECC) *Generic Elective (GE)

GENERAL ENGLISH -I

Credits: 3 **Semesters: I**
Subject Code: EN23101 **No. of Lecture Hours: 45**

Objectives:

- Through an exposure to contemporary passages, the students would be able to have a grasp on the language of today, with specific emphasis on the Listening, Speaking, Reading and Writing skills.
- Through the components of a passage, vocabulary and grammar section, speaking component and writing segments, there is a holistic development for language proficiency and fluency

Outcomes:

CO1: To distinguish between words which are either spelt or pronounced alike, yet render distinct meanings; imparting a sound clarity on everyday usage of language, and for developing the art of parallel listening and writing.

CO 2: To construct vocabulary and to gain understanding on the tense component, a pivotal constituent for language structuring and vocabulary building.

CO 3: To identify with economical word constructions, paying specific attention in constructing sound writing skills.

CO 4: To interpret functional grammar, the basic part involved in sentence constructing to improve linguistic skills.

CO 5: To develop communication skills to provide a platform for language efficiency for effective language deliver

UNIT- I **9Hrs**
Fundamentals of Communication-I
Short Story - The Mystery Story (source – teacherluke.co.uk) (1)
Present Tense (2)
Past Tense (2)
Future Tense (2)
Paragraph Writing (2)

UNIT- II
Language Proficiency for Effective Writing and Speaking Skills-I **9Hrs**
Poem- Goodbye Party For Miss Pushpa T.S. by Nissim Ezekiel (2)
Subject- Verb Agreement (3)
Punctuations (2)
Review Writing (2)

UNIT-III **9Hrs**
Wit and Humour
From the text Atea Party by Ruth Prawer Jhabvala **(1)**

Explanation of the text (2)
Grammar -------Nouns, Articles (2)
Vocabulary --- Homonyms, Homophones, Homographs (2)
Writing Skill ------Note- Making (2)

UNIT-IV **9Hrs**
Human Values
From the text "India's Contribution to World Unity" **(1)**
Explanation of the text (2)
Grammar----adverbs (2)
Vocabulary----Adjective and Adverb Suffixes (2)
Writing Skill------Formal Letters and Curriculum Vitae (2)

UNIT-V **9Hrs**
From the text "Sachin Tendulkar"
Explanation of the text (3)
Grammar----- Adjectives, Comparison of Adjectives (3)
Vocabulary-----Common Errors, Commonly Misspelt words, Commonly Confused Words (3)

Writing Skill-----References and Bibliographies

ESSENTIAL READING

1. Skills Annexe – Functional English for Success.Orient Black Swan.

SUGGESTED READING

1. Balasubramaniam, M. 1985. **Business Communication**. Vani Educational Books, New Delhi.
2. Krishna Mohan and Meera Banerjee, 1990. **Developing Communication Skills.** Macmillan India Ltd. New Delhi.
3. Krishnaswamy.N. and Sriraman, T. 1995. **Current English for Colleges**. Macmillan India Ltd. Madras
4. Narayanaswamy, V.R. 1979. **Strengthen Your Writing**. Orient Longman, New Delhi
5. Sharma, R.C. and Krishna Mohan. 1978. **Business Correspondence**. Tata McGraw-Hill Publishing Co., New Delhi.

VALUE EDUCATION & PERSONALITY DEVELOPMENT

Credits: 2 **Semester: I**
Subject Code: VE18101 **No. of Lecture Hours: 30**

Objective: To produce intellectually competent, morally upright, socially committed, spiritually inspired citizens in the service of the nation and the world.

Outcome:
CO1: Students will be able to **differentiate** Accepted norms and Counter values and be able to identify the various Dimensions of Human Development.
CO2: Students will be able to **demonstrate** Love and Experience of God and identify the Basic Issues of Life and Happiness as a life goal.
CO3: They will able to **understand** the importance of Concern for others and critique the various problems that deter the growth of the society.
CO4: The students will be able to **recognize** the traits of a good personality and practice Self-exploration.
CO5: Students will be able to interpret the Purpose of Life and Goal Setting and **demonstrate** Self-management.

UNIT-I 6Hrs
INTRODUCTION TO ETHICS
Why Value Education?
Reasons to have Ethics for Life
Accepted Norms and Counter Values
Dimensions of Human Development: Physical, Intellectual, Emotional, Moral, Spiritual and Social

UNIT-II 6Hrs
APPROACH TO LIFE
Conscience and Pseudo-Conscience
Happiness as Life-goal
Values revealed and lived in Religions
Experience of God
Love: The three components of Love
Some of the basic stages and issues of Life: Family, Love, Sex, Marriage

UNIT-III 6Hrs
CONCERN FOR OTHERS
Self and Another
Human Context
Moral Problems of a Society / True Society : Social Desire, Social Fear, Social Silence, Social Indifference

UNIT-IV 6Hrs
TRANSFORMATION OF SELF
Definitions of personality
Characteristics of personality
Elements of personality
Traits of good personality

Self-Identity, Self Concept
Self-Discovery, Self-Acceptance
Self-Esteem
WORK SHEET (1): Self Estimation

UNIT-V 6Hrs

LIFE ENRICHMENT SKILLS

Purpose of life - Goal setting
Characteristics of Goals
Building Relationships
Time Management
Stress Management
Emotional Management
Conflict Management
Team Management (Group Dynamics)

WORK SHEETS (1) & (2):
1) Anger Management
2) Team Management

ESSENTIAL READING:

1. Human Values - Development Programme – AIACHE In Harmony

DIGITAL LOGIC DESIGN & COMPUTER ORGANIZATION

Credits: 4 **Semester: I**
Subject Code:BS25102 **No. of Lecture hours: 60**

Objectives:

- To understand the basic theoretical concepts of digital systems like the binary system and Boolean algebra.
- To express real life problem in logic design terminology.
- To use Boolean algebraic formulations to design digital systems.
- To design using combinational/sequential circuits.
- To understand the Instruction execution stages.
- To explain the functions of the various computer hardware components.

Course Outcome:

CO1: Student could able to design, understand the number systems.
CO2: Student could able to design, understand the combinational sequential circuits.
CO3: Student could able to implement and analyze algorithms for fixed-point and floating-point arithmetic operations, memory locations, machine addresses, addressing modes, and instruction formats.
CO4: Student could able to understand CPU organization, register transfers, instruction execution, bus organization, memory organization and memory management techniques.
CO5: Student could able to comprehend I/O systems, interrupt handling, device control, DMA, buses, and standard I/O interfaces for effective communication between peripheral devices and the CPU.

UNIT-I **12Hrs**

1. **Basic Structure of Computers** : Computer Types, Functional units, Basic operational concepts, Bus structures, Software, Performance, multiprocessors and multi computers, Computer Generations. 6
2. **Data Representation:** Binary Numbers, Fixed Point Representation. Floating– Point Representation. Number base conversions, Octal and Hexadecimal Numbers, complements, Signed binary numbers, Binary codes. 6

UNIT-II **12Hrs**

1. **Digital Logic Circuits**: Basic Logic Functions, Logic gates, universal logic gates, Minimization of Logic expressions. 6
2. Flip-flops (RS, JK, D, MS-JK), Combinational Circuits (Half Adder, Full Adder), Decoders(3 to 8), Multiplexers 6

UNIT-III **12Hrs**

1. **Computer Arithmetic**: Algorithms for fixed point and floating-point addition, subtraction, multiplication and division operations. 6
2. **Instruction Set & Addressing**: Memory Locations and Addresses, Machine addresses and sequencing, Various Addressing Modes, Instruction Formats 6

UNIT -IV **12Hrs**

1. **Processor Organization**: Introduction to CPU, Register Transfers, Execution of Instructions, Multiple Bus Organization. 6
2. **Microprogrammed Control Memory Organization:** Concept of Memory, RAM, ROM memories, cache memories, virtual memory, secondary storage, memory management requirements. 6

UNIT -V **12Hrs**

1. **Input / Output Organization**: Introduction to I/O, Interrupts- Hardware, 2
2. Enabling and disabling Interrupts, Device Control, Direct memory access, 5
3. Buses, interface circuits, standard I/O Interfaces. 5

ESSENTIAL READINGS:

1. Computer Systems Architecture – M.Moris Mano, IIIrd Edition, Pearson. 2020
2. Computer Organization – Carl Hamacher, Zvonko Vranesic, Safwat Zaky, fifth edition, McGraw Hill. 2019
3. Computer Architecture and Organization- An Integrated Approach, Miles Murdocca, Vincent Heuring, Second Edition, Wiley India. 2010

SUGGESTED READINGS:

1. Digital Design – Third Edition, M.Morris Mano, Pearson Education/ PHI. 2023
2. Computer- organization and Design- David A. Paterson and John L.Hennessy-Elsevier. 2014
3. Computer Organization and Architecture – William Stallings Sixth Edition, Pearson. 2010
4. Fundamentals or Computer Organization and Design, - Sivarama Dandamudi Springer Int. Edition. 2002
5. Fundamentals of Logic Design, Roth, 5th Edition, Thomson. 2003

DIGITAL LOGIC DESIGN PRACTICAL

Credit:1 **Semester: I**
Course Code: CS25103 **No. of practical hours: 30**

Objectives:

- To implement simple logic operations using combinational logic circuits.
- To design combinational and sequential logic circuits in virtual and real environments.

Outcome: Students will be able to implement and design simple logical operations using combinational and sequential logic circuits.

List of Experiments:

1. Study of Logic Gates.
2. Design of Adders and Subtractors (Half, Full and Binary).
3. Study of Magnitude Comparator.
4. Code Converter (Excess-3 code).
5. Parity Generators and Checkers.
6. Study and Design of Flip Flops using gates and IC's.
7. Design of Registers using Flip Flops and ICs.
8. Design of Counters using Flip Flops and ICs.
9. Simulation experiments: Adder, subtractors.
10. Verification of RS & JK flipflops Truth tables.

OPERATING SYSTEMS

Credits : 4 **Semester : I**
Course Code: BS22101 **No. of Lecture Hours: 75**

Objective: To learn the core ideas in operating systems, process management, memory protection, CPU scheduling, concurrent programming, deadlocks and File systems.

Course Outcomes:
CO1: **Explain** functions, types and structures of operating system

CO2: **Analyze** various process management concepts including scheduling and synchronization

CO3: **Illustrate** the concepts of memory management and I/O system.

CO4: **Solve** issues related to file system interface.

CO5: **Choose** an appropriate Page replacement algorithm

UNIT – I **15Hrs**

1.	Introduction -Define Operating System, mainframe system, desktop systems	3
2.	Multiprocessor systems, distributed systems, clustered systems	2
3.	Real time systems , hand held systems	2
4.	Operating system structures-system components	3
5.	Operating system services, system calls	3
6.	system programs, system structures , virtual machines	2

UNIT – II **15Hrs**

1.	Process concept-process concept, process scheduling	4
2.	Operation on processes, cooperating processes	4
3.	Inter process communication	3
4.	Process scheduling-basic concepts, scheduling criteria, scheduling algorithms.	4

UNIT – III **15Hrs**

1.	Process synchronization-critical section problem	4
2.	Semaphores, monitors	3
3.	Deadlocks-deadlock characterization, methods for handling deadlocks	4
4.	Deadlock prevention, Deadlock avoidance, Deadlock detection	4

UNIT – IV **15Hrs**

1.	File system-file concept, access methods	3
2.	Directory structure, file system mounting, file system sharing.	4
3.	File system implementation-file system structure, file system implementation.	4
4.	Directory implementation, allocation methods, free space management	4

UNIT – V **15Hrs**

1	Memory management-swapping, contiguous memory allocation	3
2	Fragmentation-internal and external fragmentation	3
3	Paging, segmentation, segmentation with paging.	3
4	Virtual memory management-demand paging	3
5.	Page replacement algorithms, Thrashing and working set model.	3

ESSENTIAL READING

1. Silber Schatz Abraham, **Operating System Concepts**,2021,10th Edition

2. Silber Schatz Abraham, Galvin Peter, B. and Gagne Greg. 2006. **Operating System Concepts.** 6th Edition. India: Wiley.

SUGGESTED READING

1. Tanenbaum Andrew, S. 2001. **Modern Operating Systems.** New Delhi: Pearson Education

UNIX SHELL PROGRAMMING LAB

Credits : 1 **Semester: I**

Subject Code: CS25105 **No. of Practical Hours: 30**

Objectives:

- To understand the commands and programming constructs of Shell Programming.
- To understand various algorithms related to CPU scheduling and memory management.

Outcome: Students will be able to identify UNIX/Linux utilities and implement shell scripts to perform more complex tasks.

- Introduction to Vi Editor, File and Directory related Commands.
- Miscellaneous Commands
- Arithmetic in ShellScripts
- Sample programs using ShellScript
- Decision making in ShellScript
- Loop control structures in ShellScript.
- Implementation of UNIX Systemcalls
- Implementation of CPU Scheduling algorithms
- Implementations of memory management algorithms

PROBLEM SOLVING AND PROGRAMMING IN 'C'

Credits : 4 **Semester : I**
Subject Code : BS24104 **No. of Lecture Hours: 75**

Objective: To understand major programming constructs this serves as the basis for any programming language.

Course Outcomes:
CO1: **Explain Basic** concepts of C programming
CO2: **Develop** programs using 'C' control structures.
CO3: **Organize** data using arrays and strings

CO4: **Sub divides** larger problems into smaller ones using 'C' functions.
CO5: **Create** programs using the concept of structures, union and file handling in 'C'.

UNIT – I **15Hrs**

1. Introduction to C programming 3
2. Structure of C program 2
3.Files used in a C program 3
4. Compiling and executing C program 2
5. C tokens, Constants, Character set in C, Keywords 3
6. Identifiers 2

UNIT – II **15Hrs**

1. Data Types in C, Enumerated data types, typedef 3
2. Variables and scope of a variables 2
3. Data input and output statements in C 2
4. Operators and expressions 3
5. Type conversion and Type Casting 2
6. Conditional Branching Statement – if, if-else, if-else-if, switch case 3

UNIT – III **15Hrs**

1. Iterative Statements – while loop, do-while loop, for loop 3
2. Nested loops, break and continue statements, goto statement 3
3. Arrays - Single and double dimensional arrays 3
4. String- string input output functions 3
5. String manipulation functions 3

UNIT-IV **15Hrs**

1. Function- Declaring, defining and invoking functions 3
2. Categories of functions-Built-in functions 2
3. Passing parameters to functions – call by value & call by reference 2
4. Storage classes 2
5. Recursion. 2
6. Pointers - Declaration, passing pointer to functions 2
7.Pointers and one dimensional arrays 1
8.Dynamic memory allocations. 1

UNIT – V **15Hrs**

1. Structures - Simple structures, nested structure, Array of structures 3
2. Unions-Differences between Structures and Unions. 3
3. File handling - Various modes, File operations – fopen(), fclose() 3
4. File input output functions – fputc(), fgetc(), fputs(), fgets(),getw(), putw(), getc(), putc(), fprintf(), fscanf(), getchar(), putchar() 3
5. Random accessing file – fseek(), ftell(), rewind() 3

ESSENTIAL READING

1. TharejaReema.,**Programming in C**-2016,2nd Edition
2. TharejaReema. 2016. **Programming in C.** 2nd edition**.** New Delhi : OUP.
3. Kanetkar Yashwant. 2018. **Let us C.** 16th Edition**.** New Delhi : BPB.
4. Gottfried Byron. 2010. **Programming with C (**Schaum's Outline Series**).** 3rd Edition. New Delhi: McGraw Hill Education

C **PROGRAMING LAB**

Credits: 1 **Semester: I**
Course Code:CS25124No. of Practical Hours: 30

Objective: To develop applications using structured programming.
Outcome: Students will be able to write, compile and debug programs in C language.

1. Programs to implement various arithmetic operators
2. Programs to find area of circle, area of rectangle, area of square
3. Programs to find gross salary of employee
4. Programs using if, if-else, if-else if –condition statements
5. Program to stimulate calculator using switch case
6. Programs using break and continue
7. Program to print sum of "N" natural numbers
8. Program to print factorial of given numbers using loops
9. Program to print multiplication table of a given number

10. Program to LOYOLA five times
11. Program to find sum of digits and reverse of a given number
12. Program to check if the given number is palindrome or not
13. Program to find the Fibonacci series
14. Program to check the year is leap year or not
15. Program to find swap of two numbers
16. Program to print a pattern
17. Program to solve quadratic equation
18. Programs to display array elements, sum of array elements, smallest, greatestarray elements
19. Program to check if the given number is Armstrong number
20. Programs using 2-D array
21. Program to find the element in an array
22. Program to perform operations on matrices (addition, subtraction, multiplication,transpose)
23. Programs using strings and functions
24. Program to find call by value and call by reference
25. Program to find factorial using recursion
26. Program to find the sum of array elements using pointers
27. Program to accept and display book details using structures
28. Program to maintain employee details using structures
29. Program to Read a file and display its content using files
30. Program to count number of space, tabs and newlines in a file

Differential Equations and elementary number Theory

Credits : 4 **Semester: I**
Subject Code : BS19101 **No. Of Lecture Hours: 75**

Objective:
To provide strong foundation on differential equations, applications of mean value theorems, infinite series and Fourier series.

Outcome:
CO1: Categorize the differential equations with respect to their order and linearity. Solve differential equations of first order using numerical and analytical methods such as Integrating Factors.
CO2: Analyze and Solve basic application problems described by first order differential equations. Such orthogonal trajectories.
CO3:Solve second order Homogeneous Equations with Constant Coefficients. Obtain exact and numerical solutions using differential equations technology.
CO4:.Combine the necessary Laplace transform techniques to solve second-order ordinary differential equations. Solve the Laplace transform of standard functions.

CO5: Analyze a Fourier series of a given periodic function by evaluating Fourier coefficients.

UNIT I **15Hrs**

DIFFERENTIAL EQUATIONS OF THE FIRST ORDER AND FIRST DEGREE

1. Exact differential equations – Integrating factors – Change of variables 5
2. Linear differential equations 5
3. Differential Equations reducible to linear form Bernoulli's equation 5

UNIT II **15Hrs**

LINEAR DIFFERENTIAL EQUATIONS WITH CONSTANT COEFFICIENTS

1. Auxiliary equation, complementary function, particular integral 5
2. Working rule for finding P.I. when $X=e^{ax}$, Sin ax, Cos bx, x^m, $e^{ax}v$, $x^m.v$, 5
3. Cauchy's equation 5

UNIT III **15Hrs**

CALCULUS

1. Mean Value theorems: Rolle's Theorem 5
2. Lagrange's Mean Value theorem with their geometrical interpretations 5
3. Cauchy's mean Value theorem and applications 5

UNIT IV **15Hrs**

INFINITE SERIES

1. Sequence: Definition of a sequence, Limit, Convergent ,divergent and oscillatory sequences Series- General Properties of series 5
2. Necessary condition for convergence- Series of positive terms, Comparison tests- p-test 5
3. D' Alembert's ratio test, Cauchy's Root Test, Alternating Series(Without Proof), Absolute and conditional convergence 5

UNIT V **15Hrs**

FOURIER SERIES

1. Fourier Series of a function in an interval of length 2π 5
2. Fourier Series for even and odd functions 5
3. Half range series: Half range Sine series and Cosine series 5

ESSENTIAL READINGS

1. Zafar Ahsan. **Differential Equations and their Applications.** 2nd Edition. Prentice Hall of India .(Units I ,II and III)
2. B.S. Grewal. 2014. **Higher Engineering Mathematics.** 3rd Edition**.** Khanna Publishers. India: New Delhi. Unit IV and V
3. Iyengar T.K.V, B. Krishna Gandhi, Ranganatham, Prasad M.V.S.S.N. 2009. **Engineering Mathematics Vol. II.** S.Chand & Co New Delhi.

YEAR-WISE AND SEMESTER-WISE DISTRIBUTION OF SUBJECTS
DEPARTMENT OF B.Sc. COMPUTER SCIENCE AND ENGINEERING
SECOND SEMESTER
ACADEMIC YEAR 2025-26 OF 2025-28 BATCH (CBCS)

Sl. No.	Part	Subject Code	Title of the Subject	Hours /Week	Duration of Exam(hrs.)	Marks			Credits
						Internal	External	Total	
1	I	EN23201	eneral English-II (AECC-3)	3	3	40	60	100	3
2	I	IC23201	Indian Heritage & Culture (AECC-4)	2	3	40	60	100	2
3	II	BS24201	Matrices and Vector Calculus(DSC-6)	4	3	40	60	100	4
4	II	CS25203	Web technologies **(DSC-7)**	4	3	40	60	100	4
5	II	BS24204	Data structures with C (DSC-8)	4	3	40	60	100	4
PRACTICALS									
6	II	CS25206	Engineering Drawing &Engineering Workshop (DSC-5)	9	3	40	60	100	4
7	II	CS25204	Web technologies (DSC-7)	2	3	40	60	100	1
8	II	CS25205	Data structures with C Lab (CORE-8)	2	3	40	60	100	1
	Total			**30**	**-**	320	480	800	**23**
9	III	PL18001	PLANET * (Outreach)		-	-	-	-	1

*Ability Enhancement Compulsory Course (AECC) * Generic Elective (GE) * Skill Enhancement Course (SEC)

*Programme of Loyola Academy for Neighborhood Empowerment and Transformation (PLANET)

GENERAL ENGLISH –II

Credits: 3 **Semester: II**

Subject Code: EN23201 **No. of Lecture Hours: 45**

Objectives:

1. To enhance the learners' communication skills by giving adequate exposure in reading, writing, listening and speaking skills and the related sub-skills.
2. To develop oral and written communicative skills among the students so that their employability enhances and English becomes the medium of their livelihood and personality.

Outcome:

CO1: **To identify** a sound understanding on the formation of words and to demonstrate the functional grammatical component in the sentence.
CO2: To **paraphrase** ideas and thoughts in a coherent, neat and organized manner in order to utilize the writing skills for sound writing propagandas.
CO3: To **create** an understanding on Indian Literature, alongside to develop and chisel their communication skills.
CO4:To **recognize** the moral element which underlies in the short story; an exposure to informal language.
CO5: To **develop** listening and speaking skills through effective sentence constructions and efficient delivery .

Unit-I	
Fundamentals of effective communication- II	**9Hrs**
Flash Fiction- The Mice by Lydia Davies	(1)
Simple, Complex and Compound Sentences	(3)
Conversion of sentences	(3)
Information Transfer	(2)
UNIT-II	**9Hrs**
Language Proficiency for Effective speaking and Writing Skills-II	
Short Story- The Face on the Wall by E V Lucas	(2)
Active and Passive Voice	(3)
Conjunctions	(2)
Essay Writing	(2)
UNIT-III	**9Hrs**
Health	
From the text "Three Days to See"	
Explanation of the text	(3)
Grammar -------Usage of Modal Auxiliary Verbs	(2)
Vocabulary --- Collective Nouns, Technical Vocabulary	(2)
Writing Skill ------News Paper Report	(2)
UNIT-IV	**9Hrs**
Short Story	
From the text "Leela's Friend" by R.K.Narayan	
• Explanation of the text	(3)
• Grammar----Phrasal Verbs, Wh- Questions	(2)
• Vocabulary----Noun and Verb Suffixes	(2)
• Writing Skill------Writing a Narrative	(2)
UNIT-V	**9Hrs**

Inspiration
From the text "The Last Leaf" by O. Henry

- Explanation of the text (3)
- Grammar----- Prepositions (2)
- Vocabulary-----Idioms (2)
- Writing Skill----- Précis Writing (2)

ESSENTIAL READING:

1. Epitome of Wisdom, Maruthi Publications.

SUGGESTED READING:

1. Krishna Mohan and Meera Banerjee, 1990.**Developing Communication Skills**. Macmillan India Ltd. New Delhi.
2. Krishnaswamy.N. and Sriraman, T. 1995. **Current English for Colleges**. Macmillan India Ltd. Madras
3. Narayanaswamy, V.R. 1979. **Strengthen Your Writing**. Orient Longman, New Delhi
4. Sharma, R.C. and Krishna Mohan. 1978. **Business Correspondence**. Tata McGraw-Hill Publishing Co., New Delhi.

INDIAN HERITAGE & CULTURE (Theory)

Credits : 2 **Semester :II**
Course Code : IC23201 **No. of lecture hours: 30**

Objectives:

- To apprise the students with a sound background of Indian Culture.
- To equip the students with social & community problems of India.
- To prepare the student for civil service exams where Indian Heritage & Culture paper is compulsory for all the streams.

Outcome:

• Student will have knowledge about Indian Customs and Traditions.
• Student can make use of the subject knowledge to attempt all kinds of competitive especially civil services.
• The Subject helps the student community to have knowledge of historical and contemporary social, religious and political issues of the nation.

UNIT I **6Hrs**

INTRODUCTION-ANCIENT INDIAN HERITAGE AND CULTURE

• Meaning of culture-Characteristics of Indian Culture
• Indus Valley Civilization and Vedic/Aryan Culture
• Mauryas and Guptas
• Ashoka the great and Harshavardana
• South Indian Kingdoms-Satavahanas, Pallavas, Cholas
• Development of the art and architecture -contributions of Buddhism and Jainism

UNIT II **6Hrs**

MEDIEVAL INDIA-INFLUENCE OF ISLAM ON INDIAN CULTURE

• Cultural Development under the Delhi Sultanate and Mughals
• Sufi and Bakti Movement in Medieval period
• Cultural Achievements of Kakatiys and Qutubshahis
• Development of Art and Architecture during medieval India.

UNIT III

No of hours: 6

IMPACT OF WEST AND REFORM MOVEMENTS

- Influence of Western culture on Indian Society
- 19th century Socio Religious Reform Movement-Raja Ram Mohan Roy, Ishwara Chandra Vidyasagar and Veerasalingam
  Subaltern Movements in India- Jyothirao Phule-Savitribai Phule,E.V Ramaswamy Naikar-Narayana Guru-Dr.B.R.Ambedkar
- Indian National movement-Moderate, Extremist and Gandhian phases

UNIT IV

No of hours: 6

RELIGIONS AND COSTITUTIONAL INSTITUTIONS

- Perceptions of all Major Religions-A critical analysis
- Rise of communalism in Indian Society
  Democratic system in India and its functions-Evolution of the constitution and organs of democracy.

UNIT V

No of hours: 6

SOCIAL GROUPS AND RIGHTS

- Fundamental Rights,
  Women, Children and LGBTQ
- Tribal Culture- their Issues

REFERENCE BOOKS:

1. Jha, Dr K.N. 2006. Studies in ancient & Medieval India. COSMOS Book hive Ltd: Gurgaon.
2. Mahajan, V.D. 2008. Ancient India. S.Chand, New Delhi.
3. Manasseh, Dr P. 2010. An Overview of Indian Culture. Gamaleil Publishers, Hyderabad.
4. Malpani, Madanlal & Malpani, Shamsunder. 2014. Indian Heritage and Culture. Kalyani Publishers, Ludhiana.
5. Mhaske, Dr R.H. 2012. Human Rights, Social Justice and Political Challenges. Chandralok Prakashau, Kanpur.
6. Singh, Gurdip & Ahuja, V.K. 2012. Human Rights in 21" Century. Universal Law Publisher, New Delhi.

Matrics and vector calculus

Credits: 4 **Semester: II**
Subject Code: BS18201 **No. of Lecture Hours: 75**

Objective: To provide strong foundation and aptitude for understanding Computer Languages and pursue higher education.

Outcomes:
CO1: Categorize the vector-valued functions of a real variable and their curves, Gradient vector fields and constructing potentials.
CO2: Analyze the differential ideas of divergence, curl, and the Laplacian along with their physical interpretations
CO3: Use the applications of Green's theorem in the plane, Gauss divergence theorem and Stake's theorem.
CO4: Formulate the solution set of a system of linear equations
CO5: Solve the characteristic polynomial, eigenvectors, eigenvalues.

UNIT - I **15Hrs**

1	System of Linear Equations: Rank of a Matrix Rank-Echelon form	**5**
2	Normal form – Solution of Linear Systems	**5**
3	Homogeneous and non-Homogeneous Equations.	**5**

UNIT - II **15Hrs**

1	Eigen values - Eigen vectors**:** Eigen values-Eigenvectors–Properties–Cayley Hamilton Theorem	**5**
2	Inverse and powers of a matrix by using Cayley-Hamilton theorem	**5**
3	Quadratic forms- Reduction of quadratic form to canonical form	**5**

UNIT - III **15Hrs**
Vector Calculus- I

1	Vector Differentiation and the necessary and sufficient condition for a vector function to have constant magnitude and constant direction**.**	**5**
2	Vector Continuity- Differentiability- Vector Integration	**5**
3	Gradient – Directional derivative of a scalar function- Equation of the Tangent and normal to a surface	**5**

UNIT - IV **15Hrs**
Vector Calculus- II

1	Divergence and Curl Operators	**5**
2	Formulae involving these operators	**5**
3	Vector Identities- Simple Problems there on	**5**

UNIT-V **15Hrs**

Vector Calculus: III

1	Line Integrals-Surface integrals- Volume integrals	**5**
2	Green's theorem ,Gauss theorem, Stoke's Theorem (Without proofs)	**5**
3	Problems on Green's theorem ,Gauss theorem, Stoke's Theorems	**5**

ESSENTIAL READING

1. Vasistha, A.R and Vasistha, A.K. 2014. **Matrices**. Meerut : Krishna Prakashan Media (For UNITS I, II)
2. Vasistha, A.R and Dr. Agarwal, D.C. 2015. **Vector Calculus**. 9th Edition. Meerut: Krishna Publications. (For UNITS-III,IV and V)

ENGINEERING DRAWING

Credits:4 **Semester: II**
Subject Code: CS25206 **No. of lecture hours: 75**

Course objectives:

- To provide basic concepts in engineering drawing.
- To impart knowledge about standard principles of orthographic projection of objects.
- To draw sectional views and pictorial views of solids.

Course Outcomes: Student will be able to:

- Preparing working drawings to communicate the ideas and information.
- Read, understand and interpret engineering drawings.

UNIT – I Introduction to Engineering Drawing: 15 hrs

1.Principles of Engineering Graphics and their Significance 4

2.Introduction to engineering drawing and drawing instruments, 4

3.Sizes and layout of drawing sheets, Title block,Lettering & Numbering 4

4.Dimensioning and its Practice, Drawing of Geometrical Construction 3

UNIT – II Conic Sections Ellipse 15 hrs

1.Construct by Eccentricity method or General method, Concentric circle method,

Rectangle method and oblong method 4

2.Parabola in Eccentricity method or General method and Rectangle Method 4

3.Hyperbola Eccentricity method or General method 4

4. Cycloid, Epicycloid and Hypocycloid. 3

UNIT- III Orthographic Projections: 15 hrs

1.Principles of Orthographic Projections – Conventions 3

2.Projections of Points 3

3.Projections of Lines – Line Parallel to both plane (HP & VP), 3

4.Line inclined to one plane and parallel to another plane 2

5.Line inclined to both planes (HP & VP)	2
6.Projections of Plane regular geometric figures	2
(Tringle, square, circle, pentagon, and hexagon)	
UNIT – IV Projections of Regular Solids	15 hrs
1.Cube, cylinder, sphere, cone, pyramid, prism	15
UNIT – V Isometric Projections:	15 hrs
1. Principles of Isometric Projection,Isometric Scale,Isometric Views	3
2. Conventions – Isometric Views of Lines, Plane Figures,	3
3. SimpleSolids – Cube, cylinder, sphere, cone, pyramid, prism	3
Introduction to CAD: (For Internal Evaluation Weightage only):	
4. Introduction to CAD Software Package Commands. -	
5. Free Hand Sketches of 2D- Creation of 2D Sketches by CAD Package	6

TEXTBOOKS:

1. Engineering Drawing N.D. Bhatt / Charotar 54th Edition 2023 (Fifth Fourth), Charotar Publishing House Pvt. Ltd,Opposite Amul Dairy,Old Civil Court Road,Anand 388001(Gujarat) India (Unit I, II and III)

2. Engineering Drawing / N. S. Parthasarathy and Vela Murali/ OxfordUniversity Press, (Unit IV and V)

3. Computer Aided Engineering Drawing – K Balaveera Reddy et al – C B S Publishers and DistributorsPrivateLimitedNew Delhi, Delhi, (Unit V)

ENGINEERING WORKSHOP LAB

Objectives:

- To introduce the fundamentals of Manufacturing Process
- To understand/Familiar with the different processes
- To understand the process practically

Outcome: Students will be able to gain knowledge on pattern of the working in factory on the subject of preparation of the objects, house wiring and welding technology.

No.of Hours	TOPIC
12	FITTING: To make a rectangular M.S.Plate , T-Cut, L- Cut, Step Cut and V Cut
6	HOUSE WIRING: Staircase wiring, parallel and series, Bulb Connection, Bell Connection and Fan Connection.
2	Study of WELDING: Butt joint, Lap joint, T-joint and Corner Joint
4	DRILLING: Drilling holes in M.S. Plate.
4	STUDY OF MACHINE TOOLS: Lathe, Drilling machines
2	Study of BRASING and SOLDERING.

SUGGESTED READING

1. Hajro Chowdhury, **Work Shop Technology Vol – I & II**. MPP Pvt. LtdMumbai

WEB TECHNOLOGIES

Credits : 4 **Semester: II**

Subject Code: CS25203 **No. of Lecture Hours: 60Hrs**

Objectives:

- To design and develop web pages using HTML and CSS.
- To develop a well-formed XML schemas and documents.
- To use PHP language for serverside scripting and connect to the database.

Outcome:

CO1: Illustrate basic html scripts to design web pages

CO2: Explain about cascading style sheets

CO3: Analyze java script programming using operators, expressions, functions

CO4: Classify the introduction to XML,Ajax and AngularJS

CO5: Develop PHP programs and database connectivity through mysql.

UNIT-I HTML **12Hrs**

1. Web Essentials: Clients, Servers and Communication-the internet, world wide web, web clients, web servers 2

1. Origin and Evolution of HTML and XHTML, basic syntax, Document structure 2

2. Basic text markup, Images 2

3. Hypertext links, lists,table 2

4. control elements – Drag and Drop – Audio – Video controls 2

5. Forms ,Frames 2

UNIT-II CASCADING STYLE SHEETS **12Hrs**

1. Introduction, Levels of style sheets, style specification format 2

2. Selector forms, property value forms 2

3. Font properties, list properties 3

4. Color, alignment of text, the box model 3

5. Background: Border Images – Colors – Shadows – Text – Transformations – Transitions – Animations. Bootstrap Framework 2

UNIT-III JAVASCRIPT **12Hrs**

1. Overview, object orientation and JavaScript 2

2 .Primitives, operations, expressions 3

3. Control statements in Javascript 2

4. Screen output and keyboard input 3

5. Arrays, Functions in Javascript 2

6. Events and Event Handling Techniques

UNIT-IV Introduction to XML AJAX 12Hrs

1.XML: Syntax, Document Structure, DTD, Document Object model 3

2. Displaying XML documents with CSS 3

3. AJAX-Enabled Rich Internet Applications: introduction, history of Ajax, traditional web applications Vs Ajax Applications, 3

4. RIAs with Ajax, Ajax example using XML Http Request object, creating full scale Ajax-enabled application, Dojo Toolkit. 3

UNIT-V Introduction to AngularJS 12Hrs

1. Overview, Environment Setup 3

2. Components, Modules 2

3. Data Binding, Event Binding 3

4. Templates, Directives, 2

5. Pipes, Routing, Forms 2

ESSENTIAL READING

1. Sebesta, Robert W. 2011. Programming the World Wide Web. **7 Edition** New Delhi: Pearson Education

2. Internet and World Wide Web: How to Program, 5/e,2018,Pearson Education

3. ANGULARS JS,Deshmukh &Kothawade,January 2020,Nirali Prakashan

WEB TECHNOLOGIES LAB

Credits: 1 **Semester: II**

Subject Code: CS25204 **No. of Practical Hours: 30**

Objective:

To develop web applications using HTML,JavaScript,XML.·

Outcome:

Students will be able to develop dynamic web pages using Java Script, gain knowledge in· server side scripting with PHP language, and parsing XML.

1-2. Programs to demonstrate on basic HTML tags.

3-4. Programs to demonstrate on different types of lists.

5-6. Programs to demonstrate on frames, forms, tables creation.

7. Programs to demonstrate on inline, external, embedded style sheets.

8-9.Programs to demonstrate control structures.

10. Programs to demonstrate on functions, arrays.

11. Programs to demonstrate on XML document.

12. Programs to demonstrate on DTD and its XML document.

13-14. Ajax program to create input page to receive any text or number and server side page to process the request

15 Write angular program on Data binding, event binding, templates

16. Write angular program on directives, Pipes, Routing, Forms

17.Write the code to design a web page for sign-in and register using angular(UI)

18. Building a user Register/login web application.

DATA STRUCTURES WITH C

Credits : 4 **Semester : II**
Subject Code : BS24204 **No. of Lecture hours: 60**

Objective: To focus on different methods of sorting, searching, storing data and understanding time and storage efficiency.

Outcomes: Students will be able to
CO1: Choose appropriate data structures to represent data items in real world problems
CO2: Ilustrate non-linear data structures like linked list
CO3: Organize the data using sorting various linear data structures and determine time complexity
CO4: Construct data with nonlinear data structure using trees.
CO5: Explain the concept of graphs and b trees

UNIT-I	**12 Hrs**
1. Introduction to Data Structures	1
2. Stacks- Definition and various operations performed on stacks	4
3. Queues - Definition and various operations performed on queues Stack applications	4
4. Notations - Prefix, Postfix, Infix	1
5. Conversions -Infix to Postfix, Infix to Prefix	2

UNIT-II	**12 Hrs**
1. Data Representation, Concept of linked list	2
2. Advantages of Linked List, Types of linked list	1
3. Linear Linked list - Various operations performed on singly linked list	3
4. Doubly Linked List - Various operations performed on singly linked list	3
5. Circular Linked List	1
6. Applications of Linked Lists	2

UNIT-III	**12 Hrs**
1. Trees: Definition and properties	2
2. Binary Trees-Definition and Representation of Binary trees	2
3. Operations: insertion, deletion, search	2
4. Tree traversal techniques- in order. pre order. post order	2
5. AVL trees Definition and representation of AVL	2
6. Trees: Operations on AVL trees- insertion, deletion	2

UNIT-IV	**12 Hrs**
1. Sorting methods	1
2. Bubble sort	2
3.Insertion sort	2
4.Selection sort	2
5.Merge sort	2
6.Quick sort	2
7. Searching techniques	1

UNIT - V	**12 Hrs**
1.Graphs:Terminology & Representations	3
2. Definition and representation of graph	1
4.Graph Traversal -BFS, DES	1
5.B-Trees : Definition and representation of B-Trees	1

6.Operations on B- Tree-insertion, deletion, search	2
7.File Structures - Physical Storage Media File Organization	1
8.Sequential Files, Indexing and Hashing, Primary indices, Secondary indices	1
9. Indexing and Hashing Comparisons.	1

ESSENTIALREADING

1.Kanetkar, Yashvanth,2020, 14th Edition,Data Structures through C
2.Kanetkar, Yashvanth.2008. Data Structures through C.India: BPB Publications.
3.Tanenbaum, A.M.Langsam, Y.Augenstein, M.J.Data Structures Using C. New Delhi: Pearson Education

SUGGESTED READINGS:

1.Balagurusamy, E. C Programming& Data Structures. Tata McGrawHill.
2.KrishnaMoorthy.R. IndiraniKumaravel, G. 2008.Data Structures Using C. Tata Mc Graw Hill Publishing Company Lid

Data Structures with C Lab

Credits : 1 **Semester : II**
Subject Code : CS25205 **No. of Lecture hours:30**

Objectives: To implement data structures for problem solving To implement and analyze the searching algorithms in the context of specific engineering problems

Outcomes:

1. Choose the appropriate data structure for problem solving.
2. Code, debug and demonstrate the working nature of different types of data structures and their applications.
3. Analyze and Compare various linear and non-linear data structure.
4. Document the results and operations of various Data Structure.

1. Program to find transpose of a sparse matrix

2 .Program to find the sum of two 2-D arrays of order 2X2

3 .Program to find the transpose of a matrix

4 .Program to find the upper triangle of an array

5 .Program to find the trace of a 2-D array

6 .Program to find the lower triangle of an aray

7 .Program to find the addition of two sparse matrix

8 .Program to perform linear search

9 .Program to implement binary search

10.Program to implement bubble sort

11 .Program to implement insertion sort

12.Program to implement selection sort

13 .Program to implement quick sort

14 .Program to implement merge sot on 2 sorted lists

15 .Program to implement stack operations using aray

16 .Program to implement queue operations using array

17 .Program to implement stack operations using linked list

18. Program to implement queue operations using linked list

19 .Program to convert infix expression to postfix

20 .Program to evaluate a postfix expression

21 .Program to create a linked list

22 .Program to concatenate two lists

23 .Programs to perform insertion and deletion operations on the linked list

24 .Program to copy a list into another list

25 .Program to split a list into two linked lists

26 .Program to search for a node in the list.

27 .Program to find the number of elements in the list

28 .Program to illustrate tree traversal techniques.

29 .Program to implement graph traversals

30.Design and implement a singly linked list in C to manage a collection of items (such as a list of books, products, etc.) with operations to add, delete, and search for items.

31.Implementing a Binary Search Tree (BST) for Employee Records