Date 27th May 2025

Minutes of BoS Meeting in CSE (Cyber Security)

With reference to dean academic email dated 13 May 2025 BoS meeting of **B. Tech. –CSE (Cyber Security)** 'CY' has been conducted successfully under the visionary guidance of BoS chairperson and members on dated 27.05.2025 from 11:00 AM to 1:00PM in hybrid mode.

During meeting following members were present.

S. No.	Name	Designation and Institute	Role in BoS
1.	Dr. Kanak Saxena	Prof. & Head, CS and IT Department, SATI Vidisha	Chairperson
2.	Dr. Nanhey Singh	Professor, CSE, Netaji Subhas University of Technology, New Delhi	Subject experts
3.	Dr. Dilip Singh Sisodiya	Associate Professor NIT, Raipur (CG)	Alumnus Member
4.	Shri Bhuvan Joshi	Industry Expert, Datanutts IT Solutions	Member
5.	Dr. Shilpa Datar		Member
6.	All Regular Faculty of the Department		Member

The following deliberation took place in meeting

BoS Agenda Items	
Item 1	To confirm the minutes of previous BoS meeting. • **The program is newly introduced from 2025-26.**
Item 2	To propose the scheme and structure for the subjects in I Semester for 2025-2026 admitted batch. • **The scheme of B. Tech CSE (Cyber Security) I Semester presented, discussed and is confirmed. (Annexure. I)**
Item 3	To propose the scheme and structure for the subjects in II Semester for 2025-2026 admitted batch. • **The scheme of B. Tech CSE (Cyber Security) II Semester presented, discussed and is confirmed. (Annexure. II)**
Item 4	To review and propose change in syllabus of theory/practical's and CO's if any, for the subjects in I Semester for 2025-2026 admitted batch. **The scheme and syllabus of B. Tech CSE(Cyber Security) I SEM along with COs and Mapping presented, discussed and is confirmed. (Annexure. III)**
Item 5	To review and propose change in syllabus of theory/practical's and CO's if any, for the subjects in II Semester for 2025-2026 admitted batch. **The scheme and syllabus of B. Tech CSE (Cyber Security) II SEM along with COs and Mapping presented, discussed and is confirmed. (Annexure. IV)**

Annexure: I

	SAMRAT ASHOK TECHNOLOGICAL INSTITUTE VIDISHA (M.P.) (A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV Bhopal)												
	Scheme of Examination (Semester-I)												
	for Batch Admitted in session - 2025-26 w.e.f July 2025												
	Bachelor of Technology (B. Tech.) – CSE (Cyber Security)												
Subject Code	**Subject Category**	**Subject Name**	**Maximum Marks Allotted**								**Contact Hrs. per week**			**Total Credits**
			Theory				**Practical**			**Total Marks**				
			ES	**MS**	**Assignment**	**Quiz**	**ES**	**LW**	**Quiz**		**L**	**T**	**P**	
PYB 101	BSC	Applied Physics	60	20	10	10	30	10	10	150	3	0	2	4
CSA 101	ESC	Introduction to Computer Science Engineering	60	20	10	10	30	10	10	150	3	0	2	4
IOA 103	ESC	Basic Electrical Engineering	60	20	10	10	30	10	10	150	3	0	2	4
CSA 102	ESC	Digital Electronics	60	20	10	10	--	--	--	100	3	0	0	3
MAB 101	BSC	Linear Algebra and Calculus	60	20	10	10	--	--	--	100	3	1	0	4
ILC 100	ILC	Extracurricular Activities	It is a one credit per year activity endorse in eight semester marks											
Total			300	100	50	50	90	30	30	650	15	1	6	19
MAC 101	MAC*	Universal Human Values	--	--	--	--	60	20	20	100	0	0	2	Grade
MST: Minimum two mid semester tests are to be conducted during Semester, MAC* -Mandatory courses classes will be conducted in off hours (Weekends)														

MAC	Induction Program	Non Credit
HEC	NSS/NCC/NSO	Non Credit

Annexure: II

	SAMRAT ASHOK TECHNOLOGICAL INSTITUTE VIDISHA (M.P.) (A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV Bhopal)												
	Scheme of Examination (Semester-II)												
	for Batch Admitted in session - 2025-26 w.e.f July 2025												
	Bachelor of Technology (B. Tech.) – CSE (Cyber Security)												
Subject Code	**Subject Category**	**Subject Name**	**Maximum Marks Allotted**								**Contact Hrs. per week**			**Total Credits**
			Theory				**Practical**			**Total Marks**				
			ES	**MS**	**Assignment**	**Quiz**	**ES**	**LW**	**Quiz**		**L**	**T**	**P**	
CHB 101	BSC	Applied Chemistry	60	20	10	10	30	10	10	150	3	0	2	4
CSA 103	ESC	Problem Solving Using Data Structure	60	20	10	10	30	10	10	150	3	0	2	4
ITC 101	ITC	Python Programming	60	20	10	10	30	10	10	150	3	0	2	4
HUB 101	HSMC	Communication and Report Writing	60	20	10	10	--	--	--	100	3	0	0	3
MAB 102	BSC	Statistics: Probability Distribution and Differential Equation	60	20	10	10	--	--	--	100	3	1	0	4
CSL 110	ESC	Computer Workshop (Linux Lab)	--	--	--	--	30	10	10	50	1	0	2	2
ILC 100	ILC	Extracurricular Activities	Based on participation in extra curriculum activities, one credit per year to be endorsed in the eight semester mark sheet.											
Total			300	100	50	50	120	40	40	700	16	1	8	21
MAC 102	MAC	Professional Ethics and Social Responsibility	--	20	20	10				50	0	0	2	Grade
MST: Minimum two mid semester tests are to be conducted during Semester, MAC* -Mandatory courses classes will be conducted in off hours (Weekends)														

ILC	Internship-I (60 Hr) Institute Level	Non Credit
HEC	NSS/NCC/NSO	Non Credit

Annexure: III

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)

Semester/Year			Program		B.Tech.
Subject Category	ESC	Subject Code:	CSA101	Subject Name:	Introduction to Computer Science and Engineering

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz		L	T	P	
60	20	10	10	30	10	10	150	3	0	2	4

Course Objective:

The objective of this course is to introduce the Computer Science and Engineering and Basic concepts of computers. To understand the component of computer and generation of computer. To familiarize students with the programming and problem-solving concepts using C Programming language. The course will help student to solve the problem using computer programming.

Course Outcomes:

Upon completion of this course, the student will be able to:

- CO1: Familiarize the importance of computer science and engineering. Understand the concept of generation of computer and learn about component of computer system.
- CO2: Understand the concept of Problem-solving using C and Implement the flowchart and program for solving Mathematical and Engineering problems.
- CO3: Articulate the Modular Programming Concept and Solve the Engineering Problem using Modular Programming.
- CO4: Articulate the Advance C Programming Concept to Solve the Engineering Problem using Structure, Union and File Management.
- CO5: Describe the various Computer Science disciplines and their applications.

UNITs	Descriptions	Hrs.	CO's
Unit-I	**Introduction to Computer Science and Engineering**: Computer: Definition, Classification, Generation, Organization-Memory & Storage Systems. Introduction of Programming: characteristics, types, algorithm. Programming solving using computer concept, flowchart. Rules/conventions of coding, documentation, naming variables.	6	CO1
Unit-II	**Problem Solving using C**: History of C, Structure of a C Program; Data types, Constant & Variable, Operators - arithmetic, logical, bitwise, relational, ternary, expressions, Control Constructs – if-else, for, while, do-while, conditional looping, Switch-case statements, Escape statements, Special constructs – Break, continue, exit (), goto labels, Type conversion & type casting, Priority & associativity of operators; Type modifiers.	10	CO2
Unit-III	**Modular Programming:** Introduction to Arrays, Declaration and Initialization, Accessing Array Elements, Types of Arrays, Operations on Arrays, Arrays and Functions, Applications of Arrays. Functions; Arguments; Calling a function; Return statement; Parameter passing – call by value, call by reference; Scope, visibility and life-time rules for various types of variables; Storage classes.	9	CO3
Unit-IV	**Advance C Programming:** Structure – basic, declaration, membership operator, pointer to structure, referential operator, self-referential structures, structure within structure, array in structure, array of structures, type def. Union – basic, declaration; Recursion – basics, comparison with iteration, types of recursion-direct, indirect, tree and tail recursion, when to avoid recursion.	8	CO4
Unit -V	**Pointers:** Pointers, Pointers - & and * operators, pointer arithmetic, Arrays and Pointers, applications in memory management. **File**	7	CO5

	Handling: Basic file operations, including reading and writing data to files .**Pre-processor Directives**: C pre-processor – basics, #Include, #define, Enumerated data type.		
Total Hours		**40**	

List of Experiments

1. Make a Poster on Component of Computer Systems/Generation of Computer System with their working. (CO1)
2. Write a program to determine given number is Armstrong number or not.(CO2)
3. Write a program to determine the roots of quadratic equation $ax^2+bx+c=0$(CO2)
4. Write a program to calculate the factorial of an integer quantity. (CO2)
5. Write a program to print diamond shape using star. (CO2)
6. Write a Program to find and print the sum of first N Prime Numbers.(CO2)
7. Write a program to convert binary to decimal and decimal to binary.(CO3)
8. Write a Program in C to read two arrays, add them and to print the resultant array. Use read_mat(),add_mat() and print_mat() functions. Array should not be declared as global variables. (CO3)
9. Write a program to read two matrix and apply addition, subtraction, multiplication, transpose operation and display result. (CO3)
10. Write a C Program to calculate area of triangle, rectangle, circle using function. (CO3)
11. Write a program using recursive function to output in reverse the sequence of characters input from the keyboard. The input is terminated by new line. Your output should be on a new line. Write an iterative solution for the same.
12. Write a Program to store data about 10 books. Which contain book title, price and number of copies of the book. After reading the data about books your program should display the data of all the book which cost more than Rs 200. (CO4)
13. Write a program using structure to accept the current time in (Hr:min:sec) , update it by one second and to print it. (CO4)
14. Write a program to count characters, spaces and new lines in a file. The name of the file should be entered through command line. (CO4)
15. Create a Poster on any one latest computer science and engineering disciplines. (CO5)

Text Book-

- Let us C By YashwantKanetkar, BPBPublication
- Programming in C, SchaumOutline,McGraw-Hill

Reference Books-

- Programming in ANSI-C By E. Balagurusami, TMHPublication
- C Programming language By Kernighan, Brian, W, Retchie, Dennis,PHI Publication
- Information Technology: Theory and Practice y PRADEEP K. SINHA (Author), PRITI SINHA (Author)

Modes of Evaluation and Rubric

The evaluation modes consist of performance in Two mid-semester Tests, Quiz/ Assignments, term work, end- semester examinations, and end-semester practical examinations.

List/Links of e-learning resource

List and Links of e-learning resources:

1. https://nptel.ac.in/courses/108/105/108105132/
2. https://de-iitr.vlabs.ac.in/

Recommendation by Board of studies on	May-2025
Approval by Academic council on	
Compiled and designed by	CSE
Subject handled by department	CSE

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)

Semester/Year			Program		B.Tech.
Subject Category	ESC	Subject Code:	CSA102	Subject Name:	Digital Electronics

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz		L	T	P	
60	20	10	10	30	10	10	150	3	0	2	4

Prerequisites:

Basics of Physics

Course Objective:

The objective of this course is to provide the fundamental concepts associated with the digital logic and circuit design. To familiarize students with the different number systems, logic gates, minimization of logic circuits and combinational and sequential circuits utilized in the different digital circuits and systems. The course will help student to design and analyze the digital circuits and systems.

Course Outcomes:

Upon completion of this course, the student will be able to:

- CO1: Convert different number systems and codes used in digital circuits and systems.
- CO2: Simplify and analyze the digital logic circuits using Boolean algebra and other mapping techniques.
- CO3: Analyse and design different combinational logic circuits using different mapping techniques and mathematical tools.
- CO4: Compare different types of sequential circuits viz. counters in the domain of analysis.

UNITs	Descriptions	Hrs.	CO's
Unit-I	**Introduction to Digital Electronics**: Review of number system and conversions; Binary Arithmetic, Signed and Unsigned representation, Binary codes, Gray Code, Code Conversions, Error detection and correction codes - parity check codes and Hamming code.	8	CO1
Unit-II	**Boolean Algebra and Switching Functions -** Study of basic logic gates, Basic postulates and fundamental theorems of Boolean algebra; Standard representation of logic functions - SOP and POS forms; Simplification of switching functions - K-map and Quine-McCluskey tabular methods.	8	CO2
Unit-III	**Combinational Logic Modules and their applications**: Adders, Sub tractors, Code Converters, parity generators and comparators, Encoders & Decoders, BCD to seven-segment decoder, Multiplexers& De-multiplexers and their applications.	9	CO3
Unit- IV	**Sequential Circuits and Systems:** Set-Reset latches and flip flops, D-flip-flop, R-S flip-flop, J-K Flip-flop, Master slave Flip flop, edge triggered flip-flop, T flip-flops, Shift	7	CO4

	registers, classification of shift registers.		

V	**Counters classification**: asynchronous counters, synchronous counters, counters design, BCD counter.	8	CO4
Guest Lectures (if any)		--	
Total Hours		40	
List of Experiments			
Text Books- • M. Mano, "Digital Logic and Computer Design", Pearson Education. • T. L. Floyd, “Digital Fundamentals”, Pearson Education. • A. Anand Kumar, “Fundamentals of Digital Circuits”, PHI.			
Modes of Evaluation and Rubric			
The evaluation modes consist of performance in Two mid-semester Tests, Quiz/ Assignments, term work, end-semester examinations, and end-semester practical examinations.			
List/Links of e-learning resource			
List and Links of e-learning resources: 3. https://nptel.ac.in/courses/108/105/108105132/ https://de-iitr.vlabs.ac.in/			

Recommendation by Board of studies on	May-2025
Approval by Academic council on	
Compiled and designed by	CSE
Subject handled by department	CSE

Annexure: IV

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)

Department of AI

Semester/Year			Program		B.Tech.
Subject Category	ESC	Subject Code:	CSA103	Subject Name:	Problem Solving using Data Structures

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz		L	T	P	
60	20	10	10	30	10	10	150	3	0	2	4

Prerequisites:

Logical thinking and Computer Fundamentals

Course Objective:

Introduce the fundamentals of data structures and how these concepts are useful in problem solving.

Course Outcomes:

CO-1Understand- Problem solving using of data structure and various searching and sorting methods.
CO-2 Apply- Apply different concepts of data structures to solve different computing problems.
CO-3 Analyse- Analyze the access pattern of various data structure and understand their applicability.
CO-4 Evaluate-Evaluate and Compare the performance of different data structures on real world problems.
CO-5 Discuss- Graph and Tree structure with their operations and applicability

UNITs	Descriptions	Hrs.	CO's
Unit-I	Problem solving concepts: top-down, bottom-up design, Concept of data type, variable, constant and pointers. Dynamic memory allocation. Introduction to data structure: Linear, Nonlinear, Primitive and Non primitive. Arrays- Concepts of Arrays, Single dimensional array, two dimensional array- Representation and Address Calculation, Operations on arrays with algorithms (traversing, searching, inserting, deleting) and analysis.	08	
Unit-II	List-Singly linked lists: Representation in memory, Operations on singly linked list with algorithms (traversing, searching, insertion, deletion)Doubly linked list-Operations with algorithms and analysis. Circular linked lists- Operations with algorithms and analysis. Representation & manipulations of polynomials/sets using linked lists.	06	
Unit-III	Stack- Introduction to Stack and its operations, Implementation of stack using array and linked list with comparison. Application of stacks (Polish Notations, converting infix to postfix notation, evaluating postfix notation, Parenthesis balancing, Recursion). Queue- Introduction to Queue and its operations. Implementation of queue using array and linked list. De-queue, circular queue, priority queue. Applications of queue	09	
Unit-IV	Tree- Definition and terminology, concept of binary tree and representation, Traversing binary tree (pre order, post order, in order) Operation with algorithm -insertion and deletion. Binary Search Trees and Concept of balance tree (AVL). Graph- Definition and terminology, Types of graphs, Representation of graph. Traversing of graph- Breadth First Traversing and Depth First Traversing.	09	

V	Searching- Search methods- Linear search, Binary search and Hashing (collision, chaining and probing) with their algorithms and analysis. Sorting- Sorting Methods-Bubble sort, Selection sort, Insertion sort, Quick sort, Merge sort, Radix sort, Shell sort with their algorithms and analysis.	08	
Guest Lectures (if any)		--	
Total Hours		40	

List of Experiments

1. Write program to implement pointers and structure in C to understand the concepts of Dynamic memory allocation.
2. Write a program to implement concept of linear array with following operations:
   i. Traverse an array.
   ii. Find minimum item, maximum item, and average of an array items.
   iii. Insert a new item at beginning, end and middle position within an array.
   iv. Delete an item from an array.
3. Write a program to implement singly linked list with following operations
   i. Insert a new item at beginning, end and middle position within a single linked list.
   ii. Delete an item from single linked list.
   iii. Traverse a single linked list.
4. Modify the singly linked list program to make it for doubly linked list.
5. Write a program to implement Stack with its operations (Push, Pop, Peek, IsEmpty) using:
   i. Using array
   ii. Using linked list
6. Write a program to evaluate postfix notation using stack.
7. Write program to implement queue with its operations (enqueue, dequeue) using:
   i. Using array
   ii. Using linked list
8. Modify the queue program to implement circular queue with its operations.
9. Write a program to implement binary search tree with insert and delete operations.
10. Write a program to implement depth first traverse and breadth first traverse on a graph.
11. Write program to implement linear search and binary search on a given array.
12. Write a program to sort a given list of 10000 random integers and compare their execution time using:
    i. Bubble sort
    ii. Insertion sort
    iii. Merge sort
    iv. Quick sort
    v. Radix sort

Reference Books-

- Data Structure- Schaum's Series- McGraw Hill Publication
- Data Structure- Horwitz and Sartaj Sahni
- Data Structure through C, Yashwant Kanekar, BPB Publication.

Modes of Evaluation and Rubric

The evaluation modes consist of performance in Two mid-semester Tests, Quiz/ Assignments, term work, end-semester examinations, and end-semester practical examinations.

List/Links of e-learning resource

Recommendation by Board of studies on	May-2025
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Computer Science & Engineering

SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
(Engineering College), VIDISHA M.P.
(An Autonomous Institute Affiliated to RGPV Bhopal)

Semester/Year			Program		B.Tech.
Subject Category	ITC	Subject Code:	ITC101	Subject Name:	Python Programming

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz		L	T	P	
60	20	10	10	30	10	10	150	3	0	2	4

Prerequisites:

- High School Level Mathematics
- Elementary Knowledge of Computer

Course Objective:

This course introduces core programming basics—including data types, control structures, algorithm development, and program design with functions via the Python programming language. The course discusses the fundamental principles of Object-Oriented Programming.

Course Outcomes:

Upon completion of this course, the student will be able to:

CO-1: Ability to install python and its different packages.
CO-2: Implement solution logic of problem and draw it in the form of algorithm.
CO-3: Design and write a python program for given algorithm.
CO-4: Understand and apply the list logics to problem solution.
CO-5: Understand Object Oriented with reference to python programming.

UNITs	Descriptions	Hrs.	CO's
I	Introduction to computer science, algorithms, data representation in computers, hardware, software and operating system. Installation of python- interactive shell, IDLE, saving, editing, and running a script. The concepts of datatypes: variables, immutable variables, numerical types, operators, expressions, Indentation and comments in the program.	8	CO1
II	Conditional Statements- Conditions, Boolean Logic, Logical operators and Ranges. Control Statements- Break, Continue and Pass. Flow Control-if, if-else, nested if-else, Loop statements- for loop, while loop, Nested loops.	8	CO2
III	String: subscript operator, indexing, slicing a string; strings and number system: converting strings to numbers and vice versa. Strings and text files, manipulating files and directories, os and sys modules, text files: reading/writing text and numbers from/to a file, creating and reading a formatted file (csv or tab-separated).	9	CO3
IV	Lists, tuples, and dictionaries. Basic list operators, replacing, inserting, removing an element, searching and sorting lists, dictionary literals, adding and removing keys, accessing and replacing values, traversing dictionaries.	7	CO4
V	Classes and OOP: Classes, objects, attributes and methods, defining classes, design with classes, Inheritance, Overloading, Overriding, and Data hiding. Exception: Exception Handling, except clause, Try finally clause, User Defined Exceptions.	8	CO5
Guest Lectures (if any)		--	
Total Hours		40	

List of Experiments

1. Write a program in python to check a number whether it is prime or not.
2. Write a program to check a number whether it is palindrome or not.
3. Write a function to swap the values of two variables through a function.

4. Write a python program to Read a file line by line and print it.
5. Write a program to display the number of lines in the file and size of a file in bytes.
6. Write a program to calculate the factorial of an integer using recursion.
7. Write a program to print Fibonacci series using recursion.
8. Write a program for binary search.
9. Python Program for Sum of squares of first n natural numbers.
10. Python Program to find sum of array.
11. Python program to read character by character from a file.
12. Python Program to print with your own font.
13. Python program to print even length words in a string.
14. Python program to check if a string is palindrome or not.
15. Program to print ASCII Value of a character.
16. Python program to find smallest and largest number in a list.
17. Python program to find the size of a Tuple.

Text Books-

- M. Mano, "Digital Logic and Computer Design", Pearson Education.
- T. L. Floyd, “Digital Fundamentals”, Pearson Education.
- A. Anand Kumar, “Fundamentals of Digital Circuits”, PHI.

Modes of Evaluation and Rubric

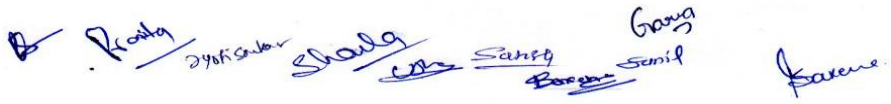
The evaluation modes consist of performance in Two mid-semester Tests, Quiz/ Assignments, term work, end-semester examinations, and end-semester practical examinations.

List/Links of e-learning resource

List and Links of e-learning resources:

4. https://nptel.ac.in/courses/108/105/108105132/
5. https://de-iitr.vlabs.ac.in/

Recommendation by Board of studies on	27.05.2025
Approval by Academic council on	
Compiled and designed by	CSE
Subject handled by department	CSE



SAMRAT ASHOK TECHNOLOGICAL INSTITUTE
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Semester/Year			Program		B.Tech.
Subject Category	ESC	Subject Code:	CSL110	Subject Name:	Computer Workshop

Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks				
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz		L	T	P	
--	--	--	--	30	10	10	50	1	--	2	2

Prerequisites:

Course Objective:

1. To teach principles of operating system including File handling utilities, Security by file permissions, Process utilities, Disk utilities, Networking Commands, Basic Linux commands, Scripts and filters.
2. To familiarize fundamentals of the Bourne again shell (bash), shell programming, pipes, input and output redirection Control structures, arithmetic in shell interrupt processing, functions, debugging shell scripts.
3. To impart fundamentals of file concepts kernel support for file, File structure related system calls (file API's).
4. To facilitate students in understanding Inter process communication.
5. To facilitate students in understanding semaphore and shared memory.
6. To facilitate students in understanding process.

Course Outcomes:

Upon completion of this course, the student will be able to:

CO1. Ability to use various Linux commands that are used to manipulate system operations at admin level and a prerequisite to pursue job as a Network administrator.
CO2. Ability to write Shell Programming using Linux commands.
CO3. Ability to design and write application to manipulate internal kernel level Linux File System.
CO4. Ability to develop IPC-API's that can be used to control various processes for synchronization.
CO5. Ability to develop Network Programming that allows applications to make efficient use of resources available on different machines in a network.

UNITs	Descriptions	Hrs.	CO's
I	**INTRODUCTION TO LINUX AND LINUX UTILITIES**: A brief history of LINUX, architecture of LINUX, features of LINUX, introduction to vi editor. Linux commands, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, Text Processing utilities and backup utilities	4	CO1
II	**Introduction to Shells**: Linux Session, Standard Streams, Redirection, Pipes, Command-Line Editing, Options, Shell/Environment Customization. **Filters:** Filters and Pipes, Concatenating files, Display Beginning and End of files, Operations on Characters, Files with Duplicate Lines, Count Characters, Words or Lines, Comparing Files.	4	CO2
III	**Grep:** Operation, grep Family, Searching for File Content. **Sed**: Scripts, Operation, Addresses, commands, Applications, grep and sed. UNIX FILE STRUCTURE: Introduction to UNIX file system, inode (Index Node), file descriptors, system calls and device drivers. **File Management**: File Structures, System Calls for File Management, Directory API.	4	CO3
IV	**PROCESS AND SIGNALS**: Process, process identifiers, process structure: process table, viewing processes, system processes, process scheduling, zombie processes, orphan process, unreliable	4	CO4

	signals, interrupted system calls. **File locking**: creating lock files, locking regions, use of read and write with locking, competing locks, other lock commands, deadlocks.		
V	**INTER PROCESS COMMUNICATION**: Pipe, process pipes, the pipe call, parent and child processes, and named pipes, semaphores, message queues, shared memory. **INTRODUCTION TO SOCKETS**: Socket, socket connections - socket attributes, socket addresses.	4	CO5
Guest Lectures (if any)		--	
Total Hours		20	

List of Experiments

1. Write a program using echo, printf, script, passwd, uname, who, date, stty, pwd commands.
2. Write a program using unlink, du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp commands.
3. Write a program using telnet, rlogin.Text Processing utilities and backup utilities , tail, head , sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk commands.
4. Write a shell script that accepts a file name, starting and ending line numbers as arguments and displays all the lines between the given line numbers.
5. Illustrate by writing script that will print, message "Hello World, in Bold and Blink effect, and in different colours like red, brown etc using echo commands?
6. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
7. Illustrate by writing script using for loop to print the following patterns?
8. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
9. Write a program inter-process communication.
10. Write a program to communicate using sockets.

Text Books-

1. W. Richard. Stevens (2005), Advanced Programming in the UNIX Environment, 3rd edition, Pearson Education, New Delhi, India.
2. Unix and shell Programming Behrouz A. Forouzan, Richard F. Gilberg.Thomson

REFERENCES Books-:

1. Linux System Programming, Robert Love, O'Reilly, SPD.
2. Advanced Programming in the UNIX environment, 2nd Edition, W.R.Stevens, Pearson Education.
3. UNIX Network Programming, W.R. Stevens, PHI. UNIX for Programmers and Users, 3rd Edition, Graham Glass, King Ables, Pearson Education

Modes of Evaluation and Rubric

The evaluation modes consist of performance in Quiz/ Assignments, term work, and end-semester practical examinations.

List/Links of e-learning resource

Recommendation by Board of studies on	May-2025
Approval by Academic council on	
Compiled and designed by	CSE
Subject handled by department	CSE