Semester Lecture Plan							

Name of the College: Government College of Arts, Science and Commerce, Sanquelim - Goa

Name of Faculty: Radhika Sujay Teli | **Subject: Computer Science**

Paper code: CSC-209
Title of the Course: Computer Organization and Operating System Lab | **Program/Course: S.Y. B.Sc.** | **Division: -**

Academic year: 2025 - 2026 | **Semester: IV** | **Total Lectures: 60**

Course Objectives:

- To understand 8086 architecture and learn the instruction set.
- To write assembly language programs to solve problems.
- To understand how to use commands in an operating system.
- To code and use shell script programs.
- 5. To code and use process management using system calls.

Course Learning Outcome:

On completion of the course, students will be able to:
- CO1. Understand the basic 8086 architecture.
- CO2. Remember 8086 instruction set and assembly language program structure.
- CO3. Execute Linux commands and create shell scripts.
- CO4. Perform process management.

Month	Lectures From: To:	No. of lectures allotted	Topic, Subtopic to be covered	Learning outcome	ICT Tools	Reference books

Month	Date (From)	Date (To)	Periods	Topic/Experiment	Details	Teaching Aids	References
December	1-12-2025	6-12-2025	4	Introduction to 8086 architecture and instruction set Find the sum of $1 + 2 + 3 + \ldots\ldots\ldots\ldots + n$	1. basic internal structure of 8086 2. major components (ALU, Registers, BIU, EU). 3. working of memory segmentation. 4. common instructions (MOV, ADD, SUB, INC, DEC). 5.practice simple assembly code. 6. logic of summation using loop. 7. Write a program for summation and execute and view output in emulator	Laptop, LCD Projector, PowerPoint Presentation, Chalk Board	Douglas Hall, SSSP Rao(2017), Microprocessors and Interfacing, McGraw Hill Education; 3rd edition, Internet, Youtube
	8-12-2025	13-12-2025	4	Display the multiplication table of a number Store and retrieve numbers from memory Block Transfer	1. use a loop in 8086 to multiply a number repeatedly and print its multiplication table. 2. save a value in memory and read it back using simple 8086 instructions. 3. copy a whole block of data from one memory location to another using efficient 8086 string instructions		
	15-12-2025	20-12-2025	4	Sort the numbers stored in the memory (Any two methods) Searching methods	Use loops, compare instructions, and memory operations to sort numbers using bubble sort and selection sort. Search for a number in memory using CMP and conditional jumps to perform linear or binary search.		

							Douglas Hall, SSSP Rao(2017), Microprocessors and Interfacing, McGraw Hill Education; 3rd edition Internet, Youtube
	22-12-25	23-12-25	2	Masking of bits	Use AND, OR, XOR instructions for masking. Perform bit-level operations on data.	Laptop, LCD Projector, PowerPoint Presentation	
January	02-01-26	03-01-2016	2	Counting of number of bits	Count the number of 1 bits in a number using shift and test instructions in a loop.		
	12-01-26	17-01-26	4	Count the number of even or odd numbers from a given set of numbers Check if the number is a palindrome	Check each number in memory using bit testing and count how many are even and how many are odd using simple loop logic. Check whether the number is palindrome		
	19-01-26	24-01-26	4	Count the number of positive and negative numbers from a given set of numbers	Check the sign bit of each number in memory and count positive negative using loops.		

				Generate a series like 1,3,5,7,…….. up to n terms	Use TEST or check MSB to determine sign Use addition instructions to generate next term to generate the series.		
	26-01-26	31-01-26	4	**Working with Linux Operating System** -Installation of Linux Operating System - Linux commands a. Directory handling utilities: cd, mkdir, rmdir, mv, pwd b. File manipulation utilities: cat, cp, ls, mv, rm, chmod, chown, find, cat, more, head, tail, cmp, wc, touch, pr .	Steps to install and set up Linux. Navigate folders and manage directories. View, copy, move, delete files and change permissions.	Laptop, LCD Projector, PowerPoint Presentation	W. Richard Stevens, Steven A. Rago (2013). Advanced Programming in the UNIX Environment. Addison-Wesley. Youtube
February	02-12-26	07-12-26	4	General purpose utilities: date, history, man, who, whoami, uptime, finger, cal, uname, tree, bc, tar, zip d. String manipulation utilites: grep, egrep, cut, paste, tr, sort, rev, awk, sed e. Process utilities: ps, pid, ppid, tty, time, kill, exit	View system information, use help commands, check user/system status, and compress or archive files. search, filter, sort, and process text efficiently. view process details, monitor system processes, and manage or terminate them using basic process commands.		

09-01-26	14-01-26	4	Network utilities: ping, ifconfig, netstat, hostname, traceroute, telnet, ssh, mount -Vi Editor - Advanced Filtering Commands: awk, sed	Network status and manage basic network tasks. Edit and save text files using Vi. Advanced Filtering (awk, sed)	Laptop, LCD Projector, PowerPoint Presentation, Chalk Board	
16-01-25	21-01-26	4	**Shell Programming** - To check if a given file exists in the current directory. - To calculate the sum of the first 10 natural numbers. - To find and display the largest number among three given numbers. - Accepts a filename as an argument and displays its content. To calculate the factorial of a given number.	file existence, perform basic arithmetic operations like sum and factorial, compare numbers to find the largest, and display file content using shell scripts.	Laptop, LCD Projector, PowerPoint Presentation, Chalk Board	Kenneth Rosen (2007). UNIX: The Complete Reference. Internet, Youtube
23-01-26	28-01-26	4	- Takes two numbers as input from user and performs basic arithmetic operations (addition, subtraction, multiplication, division). - To count the number of lines in a given text file.	perform arithmetic operations on user inputs, count lines in a file,		

Month						Resources	
				- Renames all files in a directory with a specified file extension. To concatenate two files and save the result in a new file. - Check if a user is logged in and displays a message accordingly.	rename files in bulk, merge two files, and check user login status.		
March	02-03-26	07-03-26	4	- To find and display the smallest and largest elements in an array. - Searches for a specific pattern in a given text file. To find and display all the hidden files in a directory. - Sorts a list of numbers/text in ascending/descending order. - Perform basic string manipulation operations (concatenation, substring, length).	find smallest and largest values in an array, search for patterns in files, list hidden files, sort data, and perform basic string operations	Laptop, LCD Projector, PowerPoint Presentation, Chalk Board	Sumitabha Das (2017). UNIX Concepts and Applications. Tata McGraw Hill, India. Kenneth Roson (2007). UNIX: The Complete Reference. McGraw Hill, Internet, Youtube
	09-03-26	14-03-26	4	Counts the number of files and directories in the current directory. - To find and display the process ID of a specific running process. - Checks if a given user exists or not on the system. - Generates a random password with certain criteria.	Count files and directories, find process IDs, verify user existence, generate random passwords, monitor directory changes, and identify memory-intensive processes		

				- Monitors changes in a specific directory and logs them to a file. - Display the process ID of the process using the most memory.			
	16-03-26	21-03-26	4	Displays information about the operating system. - To automate the installation of a set of packages. - To find and delete files older than a specified number of days in a directory. - Generate a report of user login activity for the last 24 hours. - To find and replace a specific pattern in multiple files within a directory.	Display OS information, automate package installation, delete old files, generate user login reports, and find & replace patterns in multiple files using shell scripts.	Laptop, LCD Projector, PowerPoint Presentation, Chalk Board	
	23-03-26	28-03-26	4	**Process Management** - Create a file, allow the user to write data to the file, display the contents and close the file using system calls - Copying a file into another file using system calls. - Display the file details including owner, size, access permissions and file access time using system calls - Creation of a child process and allow the parent to display	Create, write, read, and copy files using system calls, view file details, create child processes, and manage parent-child process execution using system calls.		

				"parent" and the child to display "child" on the screen - Creation of a child process to perform a task and before terminating, the parent waits for the child to finish its task			
	30-03-26	31-03-26	2	Revision	- Revision	-----------	-----------