Semester   **II**

Name of the Course : Object Oriented Programming Using C++

Course Code   **: SC2021**

No. of Hours / Week	Credit	Total Hours	Marks
4	**4**	**60**	**100**

Objectives:

1. To study the OOP concepts

2. To impart basic knowledge of Programming Skills in C++language.

CO	Upon completion of this course the students will be able to:	PSO Addressed	CL
CO – 1	understand Object Oriented Programming and Procedure Oriented Language and data types in C++.	**PSO - 1**	**U**
CO – 2	list out the tokens, keywords, identifiers used in C++ programming language	**PSO – 1**	**R**
CO – 3	to program using C++ features such as composition of objects, operator overloading, inheritance, polymorphism etc.	**PSO – 4**	**AP**
CO – 4	build knowledge about important concepts like functions, classes and constructors.	**PSO – 1**	**U**
CO – 5	to build C++ classes using appropriate encapsulation and design.	**PSO – 2**	**C**
CO – 6	evaluate the process of data file manipulations using C++	**PSO – 1**	**E**
CO – 7	apply virtual and pure virtual function and complex programming situations	**PSO - 4**	**AP**

Modules

Total contact hours: 60 (Incl. lectures, assignments and test)

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	**Principles of OOP and Control Structures**					
	1.	Procedure and Object Oriented programming Paradigm	1	To distinguish the difference between procedure and object	Lecture, Discussion	

					oriented programming		Evaluation through: short test
	2.	Basic Concepts and Benefits of OOP	2	To understand the OOPs concept and its uses	Lecture with PPT		
	3.	Definition of C++, Simple C++ Program, Structure of C++ program	1	To understand an overview of a C program	Lecture, Discussion		
	4.	Tokens, Keywords, Identifiers and Constants & Basic Data Types, Operators in C++, Scope Resolution Operator	2	To understand the basic program elements	Lecture, Discussion	Multiple choice questions	
	6.	Manipulators, Memory management operators	2	To recall the format used to display data	Lecture, Discussion		
	7.	Control Structures	1	To analyze the various programming constructs and implement it to perform specific task	Lecture with PPT Illustration, Discussion	Formative Assessment	
II	**Functions in C++, Classes & Objects, Constructors and Destructors, Operator Overloading**						

	1.	Main Function & Function Prototyping	1	To be able to define function and write programs using function prototyping	Lecture, Discussion	Short test
	2.	Call by Reference, Return by Reference, Inline functions, Default Arguments	3	To develop programs by passing address as arguments,	Lecture with PPT Illustration	
				passing default values as arguments To recall that developing programs using inline function will save memory space and time		Multiple choice questions
	3.	Function Overloading, Friend Functions, Virtual Functions	3	To write programs with same function names to perform many tasks To develop programs to handle some specific tasks related to class objects	Lecture with PPT Illustration	Formative Assessment t

	4.	Specifying a Class	1	To be able to create programs using class	Lecture with PPT Illustration	
	5.	Defining Member Function & Private Member Functions, Static Data Members	2	To recall the member functions and data members	Lecture	
	6.	Arrays of Objects	1	To develop programs using arrays of objects	Lecture, Discussion	
	7	Constructors, Multiple Constructors in a Class	1	To distinguish the difference between constructors and multiple constructors	Lecture with PPT Illustration	Multiple choice questions Quiz Evaluation through: short test
	8	Destructors, Overloading Unary Operators	1	To be able to destroy constructor. To develop programs using unary operators	Lecture, Illustration	
	9	Overloading Binary Operators	1	To develop programs using binary operators	Lecture, Illustration	
III	**Inheritance, Pointers and I/O Operations**					

		Single Inheritance, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance	3	To analyze the different types of inheritance and the difference between them	Lecture with PPT Illustration	Short test Formative Assessment
		Abstract Classes , Member Classes: Nesting of Classes	1	To define abstract and member classes	Lecture with Illustration	
		Pointers to Objects, This Pointer	2	To define pointer and can create programs using pointers	Lecture with Illustration	
		C++ Streams, C++ Stream Classes	1	To define stream and stream classes	Lecture with PPT Illustration	
IV	**Pointers, Managing Console I/O Operations & Working with Files**					
	1.	Classes for File Stream Operations, Opening and Closing a File, Detecting end-of-file, File Modes	3	To understand file, able to open and close a file, able to use end of file condition in a program	Lecture with PPT Illustration	Evaluation through: short test
	2.	Formatted Console I/O Operations, Managing output with Manipulators	3	To understand the format for displaying the output	Lecture with PPT Illustration	

	4.	Classes for File Stream Operations, Opening and Closing a File, Detecting end-of-file, File Modes	3	To understand file, able to open and close a file, able to use	Lecture with PPT Illustration	
				end of file condition in a program		Multiple choice questions
	5.	File Pointers and their Manipulators, Sequential Input and Output Operations	3	To understand the functions designed for handling a single character

To be able to write and read blocks of data | Lecture with Illustration | Formative Assessment |
V	**Exception HandlingTemplate Manipulating strings**					
	1	Exception handling	1	Methods to handle errors	Lecture and Demonstration	Evaluation through: short test
	3.	Updating a File, Error handling during File Operations	2	To be able to display, modify, add or delete contents of a file	Lecture with PPT Illustration	
	4.	Command-line Arguments	1	To develop programs by supplying the arguments to the main function	Lecture with PPT Illustration	

5.	Class Templates, Class Templates with Multiple Parameters, Function Templates,	3	To understand class and functions template	Lecture with PPT Illustration	
	Function Templates with Multiple Parameters		To differentiate the difference between them	Videos	Multiple choice questions
	Manipulating strings	2	To handle the strings in the programmes	Demonstration	Formative Assessment

Course Instructor: Sr. Jothi Antony   **HOD:** Sr. Jothi Antony

Semester   II

Name of the Course :Computer Organization and Architecture

Course Code   : SA2021

No. of Hours / Week	Credit	Total Hours	Marks
4	**3**	**60**	**100**

Objectives:

1. To understand the concept of computer architecture
2. To understand the working of a central processing unit & architecture of a computer.

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	understand the theory and architect of central processing unit	PSO-1	U
CO - 2	use appropriate tools to design verify and test the CPU architecture	PSO-2	AP
CO - 3	learn the concepts of parallel processing, pipelining and interprocessor communication	PSO-3	U
CO - 4	define different number systems, binary addition and subtraction, 2's complement and representation and operations with their representation	PSO-4	AP
CO - 5	exemplify in a better way the I/O and memory organization	PSO-2	U

Modules

Total contact hours: 60 (Incl. lectures, assignments and test)

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment / Evaluation
I	**Basic of Computer**					
	1.	Basic of Computer, Von Neumann Architecture	2	To understand basics of computer.	Lecture	Evaluation through: short test
	2.	Generation of Computer, Classification of Computers, Instruction Execution.**Register Transfer and Micro operations:** Register Transfer	4	To understandab outgeneratio n and registers of computer	Lecture	Multiple choice questions
	3.	Bus and Memory Transfers, Three-State Bus Buffers, Memory Transfer	3	To understand different types of transfers	Lecture	Formative Assessment
	4.	Micro-Operations, Arithmetic Micro-Operations	3	To know about operations	Lecture with PPT Illustration	
	5.	Logic Micro-Operations,	2	To understand about operations	Lecture with PPT	
	6.	Shift Micro-Operations	2	To be able to know about shift operations	Lecture with PPT Illustration	
II	**Stack Organization:**					
	1.	Register Stack, Memory Stack, Reverse Polish Notation	5	To understand about stack	Lecture with PPT Illustration	Short test
	2.	**Instruction Formats**:	2	To	Lecture,	Quiz

		Three- Address Instructions, Two – Address Instructions,		understand about instructions	Illustration	Formative Assessment
	3.	One - Address Instructions, Zero - Address Instructions,	2	To understand about instructions	Lecture, Illustration	
	4.	RISC Instructions, Addressing Modes.	3	To describe addressing modes	Lecture	
	5.	RISC & CISC and their characteristics.	4	To describe RISC &CISC	Lecture with PPT Illustration	
III	**Arithmetic Operations**					
	1.	Addition And Subtraction With Signed-Magnitude,	3	To know about addition and subtraction	Lecture	Short test Formative Assessment
	2.	Multiplication Algorithm, Booth Multiplication Algorithm,	2	To understand about booth multiplication	Lecture, demonstration	
	3.	Array Multiplier, Division Algorithm	3	To understand about division algorithm	Lecture	
	4.	Hardware Algorithm, Divide Overflow,	3	To understand about divide overflow	Lecture	
	5.	Floating-Point Arithmetic Operations.	2	To understand floating point operations	Lecture with PPT Illustration	
IV	**Memory Organization**					
	1.	Modes Of Transfer, **DMA**-DMA Controller, DMA Transfer,	2	To understand about DMA	Lecture	Short test

	2.	**Input-Output Processor(IOP),** CPU-IOP Communication.	2	To acquire the skillsdefine IOP	Lecture with PPT Illustration Discussion	Assignment on category of functions
	3.	**Memory Organization:** Memory Hierarchy, Main Memory.	2	To understand about memory	Lecture
	4.	RAM and ROM Chips,	2	To understand about RAM and ROM	Lecture
	5.	Memory Address Map, Memory Connection to CPU, Auxiliary Memory, Cache Memory.	4	To understand about memory	Lecture	Formative Assessment
V	**Multiprocessors**					
	1.	Control memory – Address sequencing – Design of Control unit	2	To be able to define Structure System analysis	Lecture	Short test
	2.	Pipelining - Arithmetic Pipeline, Instruction Pipeline	4	To understand HIPO - SSADM	Lecture with PPT Illustration	Formative Assessment
	3.	**Multiprocessors:** Characteristics of Multiprocessors,	3	To analyze how to manage project	Lecture, Discussion
	4.	**Interconnection Structure:** Time-Shared Common Bus, Multi-Port Memory, Crossbar Switch, Multistage Switching Network, Hypercube Interconnection.	6	To be able to review the project	Lecture, Discussion

Course Instructor: V R BithiahBlessie   **HOD:** Sr. Jothi Antony

Semester **II**

Name of the Course : Desktop Publishing Using Scribus

Course Code   **: SNM202**

No. of Hours / Week	Credit	Total Hours	Marks
2	2	30	100

Objectives:

1. To provide information about open source philosophy surrounding scribus and understand what scribus can help you do.

2. To learn how the different aspects of scribus's interface can be used to develop all of the different document needs that we might have for desktop publishing.

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO -1	use critical thinking skills to independently design and create magazines, newsletter, brouchers etc.	PSO – 1	C
CO -2	understand the importance of lifelong, student driven learning	PSO - 2	U
CO -3	know the fundamentals of DTP and easily produce stylized documents	PSO – 2	U
CO -4	apply major design and marketing concepts to real world projects	PSO - 4	AP

Modules

Total contact hours: 30 (Incl. lectures, assignments and test)

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	**Scribus Basics**					

	1.	Welcome to Scribus, Download and Installation: GhostScript, Scribus 1.4.5, Installation of Scribus on Windows.	1	To be able to install software needed to work with Scribus.	Lecture with PPT Demonstration	Evaluation through: short test
	2.	Before you open Scribus - An introductory tour of the Scribus Workspace	2	To understand the environment of Scribus	Lecture with PPT Demonstration	Multiple choice questions
	3.	Introduction to Frames: Insert Sample Text, Working with Image Frames, Creating Inline Characters, Saving a Document, Zoom in on your Documents.	1	To be able to create text frames, image frames and save a document in Scribus.	Lecture with PPT Demonstration	Formative Assessment
	4.	Navigating your Documents: The Page List, Page Arrows, Document Outline, Switchingbetween Documents, Adding and Deleting Pages, Arranging Pages.	1	To be able to move from one document to another document, add, delete and arrange pages in Scribus	Lecture with PPT Demonstration	
II	**Getting to know the Workspace**					
	1.	The Scribus Workspace: The Menu Bar, The File Menu: Preferences,	2	To be able to change the default settings	Lecture with PPT	Short test

		Preferences: The General Tab, The Document Tab, The Fonts Tab, The Guides Tab, Grab Radius, The Typography Tab, The Tools Tab, The Scrapbook.		in Scribus		Quiz

Formative Assessment

Assignment on Edit, Page, Item menu and menu bar |
| | 2. | The Edit Menu, The Page Menu, The Insert Menu, The Item Menu | 1 | To be able to modify, insert frames and shapes, add pages, Items to lock and duplicate in Scribus. | Lecture,

Demonstration,

Illustration | |
| | 3. | The Toolbar, The Properties Palette | 2 | To be able to work with objects through property palettes in Scribus. | Lecture with PPT | |
| **III** | **Text Frames and Font Management** | | | | | |
| | 1. | Using Frames, Editing Your Text Frames, The Story Editor | 2 | To be able to create frames in Scribus and edit text using Story Editor | Lecture with PPT

Demonstration | Short test

Formative Assessment

Assignment |
| | 2. | The Text Tab, Text Wrapping: Flowing Text Around a Quote, Text Alignment | 2 | To be able to create flowing text around an object and change text alignment | Lecture with PPT

Illustration

Demonstration | |

	3.	Kerning and Tracking, Manipulating the Baseline Grid, Adding a Text Frame Background	2	To be able to adjust the space of text, position your text and add a background color to a text frame.	Lecture with PPT

Demonstration | Quiz |
	4.	Creating Text over a Semi-Transparent Background	1	To be able to place text on a semi-transparent background	Lecture with PPT, Illustration	
	5.	Creating Text on a Path	1	To be able to place text over a line or shape	Lecture with PPT	
	6.	Paragraph Alignment and Formatting, Fonts in Scribus	1	To be able to align, format the text and apply various fonts to text in Scribus	Lecture with PPT Demonstration	
IV	**Working with Graphics, Working with Colors**					
	1.	Working with Graphics: Working with Graphics Files	1	To be able to create image files and load images in Scribus	Lecture with PPT Demonstration	Short test
	2.	Collecting for Output, Missing Files	1	To be able to transfer files to another computer and locate missing files	Lecture with PPT Discussion	Formative Assessment
	3.	Working with Image Effects,	1	To be able to apply various	Lecture	

		Image Formats		effects to images and to understand various image formats	with PPT Discussion	
	4.	Working with Colors: Choosing Colors: The Color Wheel, Applying Colors	2	To be able to select right colors for your documents and apply various color schemes	Lecture with PPT Demonstration	
	5.	Gradients	1	To be able to create a smooth color transition and blend one or more colors	Lecture with PPT	
V	**Exporting and Printing your Documents, Automating Scribus**					
	1.	Copy Editing and Proofreading, Print	1	To be able to check your documents for accuracy, style, punctuation and grammar and to be able to see what your layout will look like before it is printed	Lecture with PPT, Illustration, Discussion	Short test Formative Assessment
	2.	Exporting to EPS or SVG	1	To be able to export files in different formats	Lecture with PPT Illustration	
	3.	Printing from within Scribus	1	To be able to print a	Lecture,	

| | 4. | A word on layers | 1 | To be able to understand the concept of layers in Scribus | Lecture, Discussion | |
| | 5. | Automating Scribus: Styles, Master Pages | 1 | To be able to apply various styles to a document and be able to reproduce and edit pages in a document | Lecture with PPT, Illustration | |

Course Instructor: J. Anto Hepzie Bai   **HOD:** Sr. Jothi Antony

Semester   **IV**

Name of the Course : UNIX and Shell Programming

Course Code   **: SC2141**

No. of Hours / Week	Credit	Total Hours	Marks
5	**4**	**75**	**100**

Objectives:

1. To familiarize students with the UNIX environment and shell scripting/programming.

2. To inculculate the knowledge of working process of UNIX operating systems.

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO -1	Identify set of commands in UNIX	PSO – 2	R
CO -2	Describe the features & functions of an operating system.	PSO - 2	U

CO -3	Customize environment settings using a text editor	PSO – 3	U
CO -4	Demonstrate UNIX commands for file handling and process control	PSO - 4	AP
CO -5	Combine several simple commands in order to produce more powerful operations.	PSO -2	AP
CO -6	Utilize system utilities to perform administrative tasks	PSO - 1	AP
CO -7	Analyze the working of the user defined commands and will be able to change the permissions associated with files.	PSO - 3	AN
CO -8	Create and manage simple file processing operations, organize directory structures with appropriate security	PSO - 3	C
CO -9	Create, delete, move and rename files and directories	PSO – 4	C

Modules

Total contact hours: 75 (Incl. lectures, assignments and test)

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	Getting Started, The UNIX Architecture and Command Usage, General Purpose Utilities					
	1.	The Operating System, The UNIX Operating System	2	To be able to define OS and about UNIX OS.	Lecture with PPT	Evaluation through: short test
	2.	The UNIX Architecture, Features of UNIX	3	To be able to understand the features and architecture of UNIX.	Lecture with PPT	Multiple choice

	3.	Locating Command, Internal and External Commands	2	To be able to distinguish between internal and external commands. To know how shell uses the PATH variable to locate commands.	Lecture with PPT	questions Formative Assessment
	4.	Command Structure, Flexibility of Command Usage	2	To be able to know the syntax of the commands and the flexibility provided by UNIX in the usage of commands.	Lecture with PPT	
	5.	cal, date, echo, bc, printf, script, passwd, who, tty, uname	3	To be able to start acquiring knowledge of the UNIX commands	Lecture, Demonstration, Illustration	
II	**The File System, Handling Ordinary Files, Basic File Attributes**					
	1.	The File, The HOME Variable	1	To be able to categorize the three types of files and to know the significance of HOME variable	Lecture with PPT	Short test Quiz
	2.	pwd, cd, mkdir, rmdir, Absolute and Relative	2	To be able to create and remove	Lecture,	Formative Assessment

		Pathnames		directories.	
				To be able to navigate the file system with cd and pwd commands.	Demonstration,
					Illustration
				To know the difference between absolute and relative pathnames.	
	3.	ls: Listing Directory Content, The UNIX File System	2	To be able to use the ls command to list filenames in a directory in different formats and the features of file system.	Lecture with PPT
	4.	cat, cp, rm, mv, lp, file, wc, od, cmp, comm, diff	3	To be able to work with commands that handle ordinary files.	Lecture with PPT, Demonstration
	5.	ls -l: Listing File Attributes, File Ownership, File Permissions, chmod	3	To be able to know the importance of ownership and group ownership of a file and how they affect security and how to change all file	Lecture with PPT

				permissions using chmod command		
	6.	Changing File Ownership	2	To be able to know how to change the owner and group owner of files using chown and chgrp commands	Lecture with PPT	
III	**The VI Editor, The Shell**					
	1.	vi Basics, Input Mode	2	To be able to work in vi editor using three modes.	Lecture with PPT	Short test
	2.	Entering and Replacing Text, Saving Text and Quitting	2	To be able to use the Input mode to insert and replace text and to use the ex mode to save the work.	Lecture with PPT	Formative Assessment
	3.	The ex Mode, Navigation, Editing Text, Undoing Last Editing Instructions, Searching for a Pattern	3	To be able to use the command mode to perform navigation, search for a pattern, delete, copy and move text, use ex mode to perform string substitution.	Lecture with PPT	

		4.	Pattern Matching	2	To be able to know the significance of metacharacters and their use in wild-cards for matching multiple filenames	Lecture with PPT Illustration	
		5.	Escaping and Quoting,	2	To be able to use the escaping and quoting to remove the meaning of a metacharacter and the significance of the three standard files that are available to every command	Lecture with PPT	
		6.	Pipes, tee, Shell Variables	2	To be able to know how a value is assigned to a variable in shell script and why shell variables are so useful.	Lecture with PPT	
IV	**The Process, Customizing the Environment, More File Attributes**						
		1.	ps: Process Status, Mechanism of Process Creation	2	To be able to understand the kernel's role in process management and examine process	Lecture with PPT	Short test

				attributes and the inheritance mechanism.		Assignment on data types, variables
	2.	Running Jobs in Background, nice: Job Execution with Low Priority, Killing Processes with Signals, at and batch: Execute Later	3	To be able to know how to run a job in background, reduce the priority of a job, kill or terminate processes, schedule jobs for one-time execution, run jobs periodically.	Lecture with PPT Discussion	
	3.	Environment Variables, The Common Environment Variables	2	To be able to distinguish between local and environment variables, how to call command with short names	Lecture with PPT Discussion	Formative Assessment
	4.	File Systems and Inodes	2	To be able to recall, edit and run previously executed commands using history mechanism.	Lecture with PPT	
	5.	The Directory, umask: Default File and Directory Permissions, find: Locating Files.	3	To be able to know the use of inode to store file attributes, how umask changes the	Lecture with PPT	

				default file and directory permissions		
V	**Simple Filters, Filters Using Regular Expressions, Essential Shell Programming**					
	1.	The Sample Database, pr, head, tail, cut, paste	2	To be able to create a database and apply the commands on it.	Lecture with PPT, Demonstration	Short test
	2.	sort, grep	2	To be able to arrange files in ascending or descending order and to find the pattern in the database.	Lecture with PPT Illustration	Formative Assessment
	3.	Shell Scripts, read: Making Scripts Interactive, Using Command Line Arguments	2	To be able to create shell scripts in simple and interactive.	Lecture with PPT, Demonstration	
	4.	The Logical Operators && and || -- Conditional Execution, The if Conditional, The case Conditional	2	To be able to create shell scripts using if and case structures.	Lecture with PPT, Demonstration	
	5.	while: Looping, for: Looping with a List, Debugging Shell Scripts with set –x	2	To be able to create shell scripts using while and for looping.	Lecture with PPT, Illustration	

Course Instructor: J. Anto Hepzie Bai   **HOD:** J. Anto Hepzie Bai

Semester IV

Name of the Course : Software Engineering

Course Code : SC2142

No. of Hours / Week	Credit	Total Hours	Marks
4	3	60	100

Objectives:

1. To understand the software engineering concepts.

2. Understand the coding, testing and user interface design

3. Design, develop the software projects and software reliability and quality management

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO -1	Apply software engineering principles and techniques	**PSO – 1**	**AP**
CO -2	Develop, maintain and evaluate large-scale software systems.	**PSO – 4**	**C**
CO -3	Produce efficient, reliable, robust and cost-effective software solutions.	**PSO - 4**	**C**
CO -4	Ability to work as an effective member or leader of software engineering teams.	**PSO – 2**	**AP**
CO -5	Ability to manage time, processes and resources effectively by prioritising competing demands to achieve personal and team goals	**PSO – 2**	**U**

Modules

Total contact hours: 60(Incl. lectures, assignments and test)

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	**Introduction to Software Engineering**					
	1.	Software Engineering Discipline	2	To recall about Software	Lecture	Evaluation through: short test
	2.	Evolution and Impact - Programs Vs Software Products.	2	To understand about Software	Lecture	
	3.	Software Life Cycle Models: Classical Waterfall Model, Iterative Waterfall Model, Prototyping Model, Evolutionary Model, Spiral Model.	5	To understand about Software Life Cycle Models	Lecture	Multiple choice questions

 Formative Assessment |
| | 4. | Software Project Management: Responsibilities of a Software Project Manager, Project Planning, Risk Management. | 3 | To understand about Project Management | Lecture,

PPT | |
| **II** | **Requirements Analysis and Specification** | | | | | |
| | 1. | Requirements Gathering and Analysis | 3 | To be able to know Requirement Gathering | Lecture, PPT | Short test

Quiz |
| | 2. | Software Requirements Specification (SRS): Users of SRS Document, Characteristics of a Good SRS Document, Attributes of Bad SRS Documents | 4 | To understand SRS | Lecture | Formative Assessment

Multiple Choice Questions |
| | 3. | Software Design: Characteristics of a | 4 | To understand | Lecture, PPT,Group | |

		Good Software Design, Cohesion and Coupling.		Software Design.	Discussion	
III	**Function-Oriented Software Design:**					
	1.	Overview of SA/SD Methodology, Structured Analysis, Data Flow Diagrams (DFDs).	3	To create and define DFD	Lecture, PPT	Short test

Formative Assessment |
	2.	Object Modeling Using UML:UML Diagrams .	5	To create and define the UML	Lecture, PPT	Multiple Choice Questions
	3.	Use Case Model: Representation of Use Cases. Why Develop Use Case Diagram, How to identify the Use Cases of a system	4	To be able to work with the Use Case Model	Lecture, PPT	Assignment on various layouts
	4.	Class Diagrams, Interaction Diagrams , State Chart Diagram.	3	To be able to understand Class Diagrams.	Lecture, PPT	
IV	**User Interface Design:**					
	1.	Characteristics of a Good User Interface, Basic Concepts, Types of User Interfaces	3	To be able to know User Interface	Lecture, Group Dicussion.	Short test

Formative Assessment |
| | 2. | Coding, Testing: Basic Concepts and Terminologies, | 2 | To be able to understand Coding and Testing | Lecture with PPT

Discussion | |
| | 3. | Testing Activities , UNIT Testing, Black-Box Testing, White-Box Testing, Debugging, Integration Testing. | 3 | To discuss the various types of testing. | Lecture | Quiz |

V	**Software Reliability and Quality Management**					
	1.	Software Reliability , Statistical Testing, Software Quality, Software Quality Management System	4	To be able to understand Software Reliability and Quality.	Lecture, Discussion	Short test
	2.	ISO 9000: What is ISO 9000 Certification, ISO 9000 for Software Industry.	2	To discuss ISO	Lecture	Formative Assessment
	3.	Computer Aided Software Engineering: CASE Environment, CASE support in Software Life Cycle, Characteristics of CASE Tools.	2	To understand CASE.	Lecture, Discussion	Multiple Choice Questions
	4.	Software Maintenance: Characteristics of Software Maintenance, Software Reverse Engineering, Software Maintenance Process Models.	3	To understand Software Maintenance	Lecture, Discussion	

Course Instructor: M.Nithila   **HOD:** J.Anto Hepzie Bai

Semester   IV

Name of the Course : Discrete Mathematics

Course Code   : SA2141

No. of Hours / Week	Credit	Total Hours	Marks
3	**3**	**45**	**100**

Objectives:

1. To understand the logic, functions and permutations and combinations.
2. To learn relations, graph models, sequences and summations.

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO -1	Learn the basic concepts of permutations, relations, graphs and trees	PSO – 1	U
CO -2	Represent discrete objects and relationships using abstract mathematical structures.	PSO – 4	AN
CO -3	Apply basic counting techniques to solve combinatorial problems	PSO - 4	AP
CO -4	Understand the basic concepts of sequences and summations	PSO – 2	U
CO -5	Apply graphs in a wide variety of models.	PSO – 4	AP

Modules

Total contacthours:45(Includinglectures,assignmentsandtests)

Unit	Section	Topics	Lecture Hours	Learningout come	Pedago gy	Assessment /Evaluation
I	**Logic**					
	1	Introduction	1			Shorttestonp roposition
	2	Propositional logic	1	Find the negation of the proposition	Lectu rewit hillus tratio n	
	3	Propositions	1	Find the conjunction and disjunction of the proposition	Lectu rewit hillus tratio n	

	4	Conditional statements	1	Find the conditional statement of the preposition	Lecturewithillustration	
	5	Truth tables of compound propositions	1	Find the truth tables of the compound proposition	Lecturewithillustration	Formative assessment test1
	6	Logical Equivalence	1	To understand the concept of the proposition	Lecturewithillustration	
	7	Constructing new logical equivalences	1	To apply the concept of theproposition	Lecturewithillustration	
II	**Functions**					
	1	Introduction	1			
	2	One-to-one & onto functions	1	To understand the concept of one-to-one & onto function.	Lecturewithillustration	Short test on Function Formative assessment test1 Formative assessmenttest1
	3	Inverse function	2	Find the inverse of the function	Lecturewithillus

					trati on
	4	Composition of functions	1	Find the compositio n of functions	Lectu rewit hillus trati on
	5	The graphs of functions	2	Acquire the knowledge of the function	Lectu rewit hillus tratio n
III	**Sequences and Summations**				
	1	Introduction	1		
	2	Sequences	2	To understand the concept of geometric and arithmetic progression	Lectu re with illustr ati on	ShorttestonPe rmutationa and Combinations
	3	Special integer sequences	1	To understand the concept of special integer sequences	Lectu re with illustr ati on
	4	Summations	2	To find the value of the summation	Lectu re with illustr ati on
	5	Recursive definitions	1	To understand recursive definition	Lectu re with illustr ati on
IV	**Counting**				
	1	Introduction	1			ShorttestonPe

						rmutationa and Combinations
						Formativeasses smenttest2
	2	The basics of counting	2	Apply the conceptof basic of counting	Lectu rewit hillus tratio n	
	3	Permutations	2	Apply the concept of permutation	Lectu rewit hillus tratio n	
	4	Combinations	2	Apply the concept of combination	Lectu rewit hillus tratio n	
V	**Relations and Graphs**					
	1	Introduction	1			
	2	Relations and their properties	1	Acquire the knowledg e about the relation and their properties.	Lectu rewit hillus trati on	Shortteston Relation
						Formativeasses smenttest2
	3	Functions as relations	2	To understan	Lectu rewit	

				d the concept of function as relation.	hillus tration
4	Propertiesof relations	2	Acquire the knowledge about properties of relations.	Lectu rewit hillus tratio n
5	Graphs model	1	To understand the concept of directed and undirected graphs.	Lectu rewit hillus tratio n

Course Instructor: Miss.M.Monisha   HOD: J. Anto Hepzie Bai

Department of Computer Science

Semester: VI

Name of the Course: Mobile Computing

Subject Code: SC1764

No. of hours per week	No. of credits	Total no. of hours	Total marks
5	5	75	100

Objectives:

1. To develop system and application level software for small, battery powered terminals equipped with the wireless network connection.
2. To develop the professional ethics in computing and able to implement the logic and techniques in information technology.

Course Outcome

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO -1	understand the basic concepts and principles in mobile computing	**PSO – 1**	U
CO -2	describe the concepts of Bluetooth, RFID, WiMAX	**PSO - 1**	U
CO -3	acquire and apply the knowledge of GSM and GPRS	**PSO – 4**	U, AP
CO -4	understand the process of CDMA,3G,Wireless LAN	**PSO – 4**	U
CO -5	describe and implementing the security techniques	**PSO – 9**	AP

Modules

Total contact hours: 75 (Incl. lectures, assignments and test)

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	**Introduction**:, **Mobile Computing Architecture, Mobile Computing Through Telephony**					
	1.	Mobile Computing	2	To learn the basic structure of mobile computing	Lecture with PPT	Evaluation through: short test

		2.	Dialogue Control , Networks	2	To recall the types of networks	Lecture with PPT	Multiple choice questions
		3.	Architecture of Mobile Computing , Three Tier Architecture	2	To illustrate the structure of mobile computing and learn all the tiers.	Lecture, PPT	Formative Assessment
		4.	Mobile Computing through Internet.	1	Able to learn how mobile computing work through internet	Lecture, PPT	
		5.	Evolution of Telephony	2	To recall the evolution of telephony systems.	Lecture, PPT	
		6.	Multiple Access Procedures	2	To study how to access the mobile computing	PPT, Demonstrat ion	
		7.	Mobile Computing through Telephone	1	Able to learn how mobile computing work through telephone		
II	**Emerging Technologies**, **Global System for Mobile Communications[GSM]:**						
		1.	Introduction, Bluetooth	2	To explain the different types of files and recall about Bluetooth technology	Lecture with PPT	Short test Quiz Formative Assessment
		2.	Radio Frequency Identification [RFID]	2	Able to know the RFID and all the frequencies	Lecture, PPT, Demonstart ion	
		3.	Wireless Broadband [WIMAX]	1	To learn how the world move towards wireless technology	Lecture, Discussion, PPT	

				and know all the categories.		
	4.	Internet Protocol Version 6[IPV6]	2	Able to study the IPV6 protocol and connections	Lecture, Demonstrat ion Discussion	
	5.	GSM Architecture	2	Able to recall the GSM methods and study the hierarchy of the architecture	Lecture, PPT	
	6.	GSM Entities	2	To study all the GSM entities	Lecture, PPT	
	7.	Call Routing in GSM, PLMN Interfaces	2	To recall the GSM routing and study the interfaces how work with the GSM	Lecture, Demonstrat ion Discussion	
	8.	GSM Addresses and Identifiers, Network Aspects in GSM, GSM Frequency Allocation.	2	To learn all types of addresses and identifiers with the help of GSM networks and know the call frequency.	Lecture, PPT	
III	**Short Message Service , General Packet Radio Services [GPRS]**					
	1.	Computing Over SMS , Short Message Service	2	To recall the SMS structure and know how SMS will transfer one station to another station	Lecture, PPT, Demonstrat ion	Short test Formative Assessment
	2.	GPRS and the Packet	3	Able to know	Lecture,	

				how split the datas into packet and how the data will transfer.	Demonstration	
	3.	GPRS Network Architecture	2	Able to study GPRS architecture and study the techniques.	Lecture, Demonstration	
	4.	Data Services in GPRS	2	To know how to work with GPRS Services	Lecture, PPT	
	5.	Applications for GPRS	2	To recall all the applications which will work with GPRS.	Lecture, PPT	
	6.	Limitations of GPRS	2	Able to remove the meaning of metacharacter and recall the importance of 3 standard files available to every command.	Lecture, PPT	
IV	**CDMA and 3G , Wireless LAN**					
	1.	Introduction, Spread-Spectrum Technology	2	Able to recall the Technology about Spread-Spectrum	Lecture	Short test
	2.	Wireless Data , Third Generation Networks	3	Able to view all the wireless data and study the 3G technologies.	Lecture with PPT Discussion	Assignment on data types, variables
	3.	Wireless LAN Advantages	3	Able to know all the advantages of wireless	Lecture with PPT	Formative Assessment

				technologies.		
	4.	Wireless LAN Architecture	2	Able to study the Architecture of Wireless Local Area Network.	Lecture with PPT	
	5.	Mobility in Wireless LAN	2	To explain the concept of LAN mobility in Wireless	Lecture	
	6.	Mobile Ad hoc Networks and Sensor Networks, Wireless LAN Security.	3	To study the networks and sensor networks and the Local Area Network Security mechanism.	Lecture with PPT Discussion	
V	**Security Issues in Mobile Computing**					
	1.	Introduction , Information Security	3	Able to know how to secure our information form hackers and stury the security mechanisms.	Lecture, Discussion	Short test Formative Assessment
	2.	Security Techniques and Algorithm	2	To recall all the security techniques and algorithms.	Lecture with PPT	
	3.	Trust , Security Models	2	Able to study the Trust mechanism and security models.	Lecture, PPT, Discussion	
	4.	Security Framework for Mobile Environment.	3	To achieve the security for our mobile environment	Lecture, Discussion	

Course Instructor: V. Abisha   **HOD:** Sr. Jothi

Teaching Plan for the Academic Year 2019-2020

Semester: VI

Name of the Course: Android Application Development

Subject Code: SC1761

No. of hours per week	No. of credits	Total no. of hours	Total marks
5	5	75	100

Objectives:

1. To enable the students to build own Android Apps and to use Android's Communication APIs for SMS, telephony etc.
2. To develop mobile applications with social and ethical responsibilities in a professional working discipline.

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO -1	Describe the platforms upon which the Android OS will run	PSO - 2	U
CO -2	Apply the fundamental paradigms and technologies to develop mobile applications	PSO - 5	AP
CO -3	Create a simple application that runs under the Android operating system	PSO – 4	C
CO -4	Develop an application that uses multimedia under Android operating system	PSO – 10	C
CO -5	Implement various methods in Android to create mobile applications for communication network	PSO – 9	AP

Modules

Total contact hours: 75 (Incl. lectures, assignments and test)

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	**Fundamentals of Java for Android Application Development**					
	1.	Introduction to Java, Developing a simple Java program, Interfaces, Inheritance	2	To recall about Java and various Java programs	Lecture	Evaluation through: short test
	2.	Introducing Java Dalvik Virtual Machine	2	To understand about Dalvik Virtual Machine	Lecture	Multiple choice questions
	3.	Introducing Android, Discussing about Android applications	2	To explain Android architecture and features of Android	Lecture, PPT	Formative Assessment
	4.	The Manifest file	1	To understand the core file of Android application development	Lecture	
	5.	Downloading and Installing Android	2	To set the environment to develop Android applications	Lecture, PPT	
	6.	Exploring the Development Environment	1	To explore the various tools used for Android Application Development	Lecture	
	7.	Developing and executing the first	2	To create and execute various programs in	Lecture, Demonstration	

		Android Application		Android		
II	Using Activities, Fragments and Intents in Android					
	1.	Working with activities, Creating an Activity, Starting an Activity	3	To create and start an activity in Android	Lecture, Demonstration	Short test
	2.	Managing the lifecycle of an Activity	1	To understand the stages with which an activity goes through	Lecture	Quiz
	3.	Applying themes and styles to an Activity	2	To be able to design the look and format of a view or window	Lecture, Discussion	Formative Assessment
	4.	Hiding the title of the Activity	1	To be able to Hide the Title of an Android application	Lecture, Demonstration Discussion	Multiple Choice Questions
	5.	Using Intents, Exploring Intent Objects, Exploring Iintent Filters	3	To understand the working of intents in Android and to create Intent Objects and Filters	Lecture, PPT	
	6.	Fragments	3	To understand the lifecycle of a fragment and to implement fragments statically and dynamically in Android	Lecture	

	7.	Using Intent object to invoke built-in application	2	To call built-in applications such as contacts, messaging and phone calls	Lecture, Demonstration	
III	**Working with the User Interface using Views and View Groups**					
	1.	Working with View Groups	2	To understand the grouping of one or more views in Android	Lecture, Demonstration	Short test

Formative Assessment

Multiple Choice Questions

Assignment on various layouts |
	2.	The LinearLayout Layout	3	To create and define the LinearLayout Layout	Lecture, Demonstration	
	3.	The RelativeLayout	2	To be able to work with the Relative Layout Layout	Lecture, Demonstration	
	4.	The FrameLayout	2	To be able to understand how to position the views using FrameLayout	Lecture, PPT	
	5.	Working with Views	2	To be able to create different views in Android	Lecture, Demonstration	
	6.	Binding data with the AdapterView class	2	To be able to bind the stored data and display the data in a	Lecture	

				specific manner		
	7.	Designing the AutoTextComplete View	2	To create and understand the AutoText Complete View	Lecture, Demonstration	
	8.	Implementing the Screen Orientation	1	To be able to switch to various screen orientations such as portrait and lansdcape modes	Lecture, Demonstration	
	9.	Creating Menus	2	To add different types of menus to your applications	Lecture, Demonstration	
IV	**Handling Pictures and Menus with Views**					
	1.	Working with Image Views	3	To be able to work with applications in GalleryView, GridView and ImageSwitcher View	Lecture, Demonstration	Short test Formative Assessment
	2.	Designing Context Menu for Image View	2	To be able to design a Context Menu for an ImageView	Lecture with PPT Discussion	Quiz
	3.	Notifying the User	3	To discuss the various notification techniques used such as Toast, Status Bar and Dialog notification	Lecture	

		4.	Storing data persistently, Introducing data storage options	3	Introduce various data storage options in Android	Lecture	
		5.	Using Internal Storage, Using External Storage	2	To write data to files and read data from an existing file,To be able to explore the various methods used for data storage	Lecture	
		6.	Using SQLite Database	1	To be able to use the SQLite database to create applications	Lecture, Discussion	
		7.	Building an Application to send Email	1	Able to create an Android Application for sending Email	Lecture, Demonstration	
V	**Working with Graphics and Animation**						
		1.	Working with Graphics, Using the Drawable object, Using ShapeDrawable object	3	To create graphics directly to the Canvas, To draw various shapes and images and 2-D Graphics	Lecture, Discussion	Short test
		2.	Working with Animations	2	To implement various Animation Systems	Lecture	Formative Assessment Multiple Choice Questions
		3.	Audio, Video and	2	To be able to play Audio	Lecture,	

		Playback, Role of Media Playback, Using Media Player		and Video files	Discussion
	4.	Preparing Audio and Video for Playback, Using Camera for taking Pictures	3	To design an Android application for playing Audio and Video files, To design an Android application for taking pictures using Camera	Lecture, Discussion

Course Instructor: Pillai Archana Baburajendranath   **HOD:** Sr. Jothi

Semester: VI

Name of the Course: **Computer Graphics and Multimedia**

Subject Code: SC1762

No. of hours per week	No. of credits	Total no. of hours	Total marks
5	5	75	100

Objectives:

1. To acquire the knowledge of computer graphics and multimedia.
2. To extend creativity and innovation in various fields of computing technology.

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO -1	Understand fundamental principles of computer graphics	**PSO – 12**	U
CO -2	Discuss algorithms for 2D and 3D transformations	**PSO – 9**	U
CO -3	Interpret simple problems in the basic representation and handling of multimedia data (images, audio and animation	**PSO - 4**	AP
CO -4	Create simple 2D animations, 3D animations	**PSO – 5**	AP

Modules

Total contact hours: 75 (Incl. lectures, assignments and test)

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment / Evaluation
I	**Introduction, Graphical Input/output Devices, Raster Scan Video Principles, Random scan Devices**					
	1.	Applications of Computer Graphics, Operations of Computer Graphics	2	Understand fundamental principles of computer graphics.	Lecture with PPT	Evaluation through: short test
	2.	Graphics Packages, Requirements of a Graphical System	2	Able to know about software packages and display adaptor cards	Lecture with PPT	Multiple choice questions
	3.	Graphical User Interfaces.	1	To explain Graphical User Interfaces	Lecture, PPT	Formative Assessment
	4.	Common Input Devices - Graphics Output Devices	2	Able to distinguish the difference between Graphical Input Output Devices	Lecture, PPT	
	5.	Plasma Panel Display , LCD Panels.	2	To illustrates the types of Displays	Lecture, PPT	
	6.	Memory Tube Displays, Plotters Graphics Accelerators and Coprocessors.	3	To explain the uses of Displays and Plitters	PPT, Demonstration	
II	**Scan Conversions, DDA Algorithms, Bresenham's Algorithms, Scan Conversion of Solids, Solid Area Filling Algorithm.**					
	1.	Scan Conversions Methods, Polynomial Method	2	To explain the different types of conversion methods	Lecture with PPT	Short test
						Quiz
	2.	DDA for Line, DDA for Circle Generation,	4	To explain DDA Algorithms	Lecture, PPT,	Formative Assessment

		Ellipse, Parabola.			Demonstartion	
	3.	Bresenham's Line Drawing Algorithm, Bresenham's Circle Algorithms.	2	To explain Bresenham's Algorithms	Lecture, Discussion, PPT	
	4.	Solid Areas or Polygons , Inside Outside Test	2	To explain Polygons, Odd-Even Methods and Winding Number Method	Lecture, Demonstration Discussion	
	5.	Boundary Fill Algorithm - Flood Fill Algorithm - Scan Line Fill Algorithm.	3	Able to explain Filling Algorithms	Lecture, PPT	
III	**2-D Geometrical Transformation, Homogenous Coordinate Systems, Other Transformations, 3-D Geometrical Transformation, Other 3D Transformations**					
	1.	Translation , Scaling, Rotation, Transformation of Points and Objects.	4	To explain 2D Transformation.	Lecture, PPT, Demonstration	Short test
	2.	Scaling about a Reference Point, Rotation about an Arbitrary Point.	2	To explain about reference point and arbitrary point	Lecture, Demonstration	Formative Assessment
	3.	2DReflection , 2DShearing	2	Recall about reflection and shearing	Lecture, Demonstration	

		4.	3D Translation, 3DScaling, 3D Rotation	3	Recall abut Transformation.	Lecture, PPT	
		5.	3DReflection ,3D Shearing	2	To recall about Reflection and Shearing	Lecture, PPT	
IV	**2-D Viewing and Clipping, 3-D Viewing and Clipping.**						
		1.	Windows and Viewports, Viewing Transformations	2	Able to explain windows and viewports	Lecture	Short test
		2.	Cohen Sutherland Clipping Algorithm in 2D ,Midpoint Subdivision Method, Concepts of Parametric Clipping, Liang-Barsky Clipping Algorithm in 2D	4	Able to explain clipping lines algorithms	Lecture with PPT Discussion	Assignment on data types, variables Formative Assessment
		3.	Polygon Clipping, Clipping against Concave Windows.	2	Recall about Clipping algorithms	Lecture with PPT	
		4.	Clipping of Lines in 3D ,Cohen Sutherland Clipping Algorithm in 3D, Liang-Barky 3D Clipping Algorithm.	3	Recall about Viewing and Clipping	Lecture with PPT	
V	**Multimedia Basics, Graphics Image File Format, Animation and Flash Overview**						

	1.	Concepts of Multimedia , MIDI , Image Compression Standards,Video Compression and Encoding , Virtual Reality**.**	7	Understand the basic concepts of Multimedia.	Lecture, Discussion	Short test Formative Assessment
	2.	BMP – GIF – JPEG – TIFF – MIX - PNG	1	Understand image file formats	Lecture with PPT	
	3.	Flash Basics ,Flash Work Environment, Using Layers, Creating Animation.	5	Able to create animation	Lecture, PPT, Discussion	

Course Instructor: V.R. Bithiah Blessie   **HOD:** Sr. Jothi

Semester: VI

Name of the Course: UNIX and Shell Programming

Subject Code: SC1763

No. of hours per week	No. of credits	Total no. of hours	Total marks
5	5	75	100

Objectives:

1. To familiarize students with the UNIX environment.
2. To learn the fundamentals of shell scripting/programming.

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO - 1	Identify set of commands in UNIX	PSO - 1	R
CO - 2	Describe the features & functions of an operating system.	PSO - 1	U
CO - 3	Customize environment settings using a text editor	PSO - 1	U
CO - 4	Demonstrate UNIX commands for file handling and process control	PSO - 1	AP
CO - 5	Combine several simple commands in order to produce more powerful operations.	PSO - 1	AP
CO - 6	Utilize system utilities to perform administrative tasks	PSO - 1	AP
CO - 7	Analyze the working of the user defined commands and will be able to change the permissions associated with files.	PSO - 3	AN
CO - 8	Create and manage simple file processing operations, organize directory structures with appropriate security	PSO - 3	C
CO - 9	Create, delete, move and rename files and directories	PSO - 1	C

Modules

Total contact hours: 75 (Incl. lectures, assignments and test)

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	**Getting Started, The UNIX Architecture and Command Usage and General Purpose Utilities**					
	1.	The Operating System, The UNIX Operating System	2	To recall functions of OS and UNIX OS	Lecture with PPT	Evaluation through: short test
	2.	A Brief Session	2	Able to login, work with commands and exit from UNIX.	Lecture with PPT	Multiple choice questions
	3.	The UNIX Architecture, Features of UNIX	2	To explain UNIX architecture and features of UNIX	Lecture, PPT	Formative Assessment
	4.	Locating Command, Internal and External Commands	1	Able to distinguish the difference between internal and external commands	Lecture, PPT	
	5.	Command Structure, Flexibility of Command Usage, Man Browsing the Manual Pages On-line	2	To illustrates the types of arguments that can be used in a command. Able to say the flexibility in the usage of commands	Lecture, PPT	
	6.	cal, date, echo, printf, bc, script, passwd, who, uname, tty, stty	3	To explain the uses, syntax & work with these commands.	PPT, Demonstration	
II	**The File System, Handling Ordinary Files and Basic File Attributes**					
	1.	The File, File Name,	2	To explain the different	Lecture with PPT	Short test

| | | The HOME Variable | | types of files and recall about home directory. | |

|
|---|---|---|---|---|---|---|
| | 2. | pwd, cd, mkdir, rmdir, Absolute and Relative Pathnames | 2 | To recall the tools that handle directories. Compare absolute and relative pathnames. | Lecture, PPT, Demonstartion | |
| | 3. | ls: Listing Directory Content, The UNIX File System | 2 | To recognize the option used to list directory contents in ls command. Able to recall the structure of UNIX file system. | Lecture, Discussion, PPT | |
| | 4. | cat, cp, rm, mv, more, lp, file, wc, od, cmp, comm., diff, gzip, gunzip, zip and unzip | 3 | Able to list out the uses and syntax for file-handling commands. | Lecture, Demonstration Discussion | |
| | 5. | ls -l: Listing File Attributes, File Ownership, File Permissions | 2 | Able to recall the options to list file attributes. Able to explain file ownership & file permissions. | Lecture, PPT | |
| | 6. | chmod, Directory Permissions, Changing File Ownership. | 2 | Able to change file permissions, directory permissions and file ownership. | Lecture, PPT | |
| III | **The VI Editor and The Shell** | | | | | |

	1.	vi Basics	1	To recall the three modes in which vi operates for sharing the workload.	Lecture, PPT, Demonstration	Short test
	2.	Input Mode - Entering and Replacing Text, Saving Text and Quitting	3	Able to use the input mode to insert, replace and save text in vi editor.	Lecture, Demonstration	Formative Assessment
	3.	The ex Mode, Navigation, Editing Text	2	Able to save your work, move around the vi editor, delete, copy and move text using operators.	Lecture, Demonstration	
	4.	Undoing Last Editing Instructions, Repeating the Last command, Searching for a Pattern, Substitution — Search and Replace	2	Able to undo the last editing action, search for a pattern, perform string substitution.	Lecture, PPT	
	5.	Shell Offerings, Pattern Matching	2	To recall shell's interpretive cycle, importance of metacharacters and their use in wild-cards for matching multiple filenames.	Lecture, PPT	
	6.	Escaping and Quoting, Redirection	2	Able to remove the meaning of metacharacter and recall the importance	Lecture, PPT	

				of 3 standard files available to every command.		
	7.	Pipes, tee, Command Substitution, Shell Variables	2	To recall how shell manipulates the default source and destination of 3 standard files streams to implement pipelines, uses of shell variables.	Lecture, PPT	
IV	**The Process, Customizing the Environment and More File Attributes**					
	1.	ps: Process Status, Mechanism of Process Creation, Running Jobs in Background	2	Able to view process attributes, run a job in background with & and nohub command.	Lecture	Short test

Assignment on data types, variables

Formative Assessment |
| | 2. | nice: Job Execution with Low Priority, Killing Processes with Signals, at and batch: Execute Later, cron: Running Jobs Periodically | 3 | Able to reduce the priority of a job, kill command to terminate processes, schedule jobs to run periodically. | Lecture with PPT

Discussion | |
| | 3. | Environment Variables, The Common Environment Variables, Aliases | 3 | Able to differentiate the difference between local and environmental variables. To use aliases to call | Lecture with PPT | |

				commands with short names.		
	4.	Command History, In-line Command Editing	2	Able to recall, edit and run previously executed commands.	Lecture with PPT	
	5.	File Systems and Inodes, The Directory, umask: Default File and Directory Permissions, find: Locating Files	3	To explain the concept of file system, Use of inode to store file attributes. Able to change the default file and directory permissions.	Lecture	
V	**Simple Filters, Filters Using Regular Expressions and Essential Shell Programming**					
	1.	The Sample Database, pr, head, tail, cut, paste, sort, grep	3	Able to format text i.e., to give margins, spacing, pick up lines from the beginning and ending, join two files laterally, searching for a pattern.	Lecture, Discussion	Short test Formative Assessment
	2.	Shell Scripts, read: Making Scripts Interactive, Using Command Line Arguments, exit and Exit Status of Command	2	To recall shell script and to execute it. Able to make shell scripts interactive and to make use of exit statement in terminating a script.	Lecture with PPT	

3.	The Logical Operators && and || --Conditional Execution	2	Able to perform elementary decision making wit && and || operators.	Lecture, PPT, Discussion	
4.	The if Conditional, The case Conditional, while: Looping, for: Looping with a List, Debugging Shell Scripts with set –x	3	To analyze the various programming constructs and implement it to perform specific task	Lecture, Discussion	

Course Instructor: J. Anto Hepzie Bai   **HOD:** Sr. Jothi