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 oriented programming	Lecture, Discussion	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++	1	To understand an overview	Lecture,	

		program		of a C program	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
	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	Lecture with PPT Illustration	

		Function Templates with Multiple Parameters		template 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 Multiple choice questions Formative Assessment
	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	
	3.	Bus and Memory Transfers, Three-State Bus Buffers, Memory Transfer	3	To understand different types of transfers	Lecture	
	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 Quiz
	2.	**Instruction Formats**:	2	To	Lecture,	

		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 multiplicatio n	Lecture, demonstrat ion	
	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 Formative Assessment
	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	
V	**Multiprocessors**					
	1.	Control memory – Address sequencing – Design of Control unit	2	To be able to define Structure System analysis	Lecture	Short test Formative Assessment
	2.	Pipelining - Arithmetic Pipeline, Instruction Pipeline	4	To understand HIPO - SSADM	Lecture with PPT Illustration	
	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 Multiple choice questions Formative Assessment
	2.	Before you open Scribus - An introductory tour of the Scribus Workspace	2	To understand the environment of Scribus	Lecture with PPT Demonstration	
	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	
	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	
	3.	Working with Image Effects,	1	To be able to apply various	Lecture	Formative Assessment

		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,	

				document from within Scribus	PPT, Discussion	
	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

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. To know the difference between absolute and relative pathnames.	Demonstration, Illustration	
	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 Formative Assessment
	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	
	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	

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 Multiple choice questions Formative Assessment
	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	
	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 Formative Assessment Multiple Choice Questions
	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	
	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 Multiple Choice Questions Assignment on various layouts
	2.	Object Modeling Using UML:UML Diagrams .	5	To create and define the UML	Lecture, PPT	
	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	
	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 Quiz
	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	

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	Pedagogy	Assessment /Evaluation
I	**Logic**					
	1	Introduction	1			Shorttestonproposition
	2	Propositional logic	1	Find the negation of the proposition	Lecturewithillustration	
	3	Propositions	1	Find the conjunction and disjunction of the proposition	Lecturewithillustration	

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

					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			ShorttestonPe rmutationa and Combinations
	2	Sequences	2	To understand the concept of geometric and arithmetic progression	Lectu re with illustr ati on	
	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.	hillustration	
	4	Propertiesof relations	2	Acquire the knowledge about properties of relations.	Lecturewithillustration	
	5	Graphs model	1	To understand the concept of directed and undirected graphs.	Lecturewithillustration	

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

Semester VI

Name of the Course : Android Programming

Course Code : SC2061

No. of Hours / Week	Credit	Total Hours	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 - 1**	**U**
CO -2	Apply the fundamental paradigms and technologies to develop mobile applications	**PSO - 2**	**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 – 4**	**C**
CO -5	Implement various methods in Android to create mobile applications for communication network	**PSO – 2**	**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 Formative

	3.	Introducing Android, Discussing about Android applications	2	To explain Android architecture and features of Android	Lecture, PPT	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 Android Application	2	To create and execute various programs in Android	Lecture, Demonstration	
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 Quiz Formative Assessment Multiple Choice Questions
	2.	Managing the lifecycle of an Activity	2	To understand the stages with which an activity goes through	Lecture	
	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	

	4.	Hiding the title of the Activity	1	To be able to Hide the Title of an Android application	Lecture, Demonstration Discussion	
	5.	Using Intents, Exploring Intent Objects, Exploring Intent Filters	3	To understand the working of intents in Android and to create Intent Objects and Filters	Lecture, PPT	
	6.	Fragments	2	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	2	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 specific manner	Lecture	
	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 lansdcapemodes	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 Gallery View, Grid View and ImageSwitcher View	Lecture, Demonstration	Short test Formative Assessment Quiz
	2.	Designing Context Menu for Image View	2	To be able to design a Context Menu for an ImageView	Lecture with PPT Discussion	
	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	2	Introduce various data storage options in Android	Lecture	
	5.	Using Internal Storage, Using External Storage	3	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	2	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 Formative Assessment Multiple Choice Questions
	2.	Working with Animations	1	To implement various Animation Systems	Lecture	
	3.	Audio, Video and Playback, Role of Media Playback, Using Media Player	3	To be able to play Audio and Video files	Lecture, Discussion	
	4.	Preparing Audio and Video for Playback,	3	To design an Android application for playing Audio and Video files.	Lecture, Discussion	

Course Instructor: Dr.F.FanaxFemy **HOD:**Ms. J. Anto Hepzie Bai

Semester VI

Name of the Course : Computer Graphics

Course Code : SC2062

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

Objectives:

1. Understand the basic concepts of Computer Graphics
2. Apply geometric transformations, viewing and clipping on graphical objects
3. Understand visible surface detection techniques and illumination models

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO -1	explain the basics of graphics system	**PSO – 1**	**U**
CO -2	use the digital scan and copy systems accordingly	**PSO –1**	**Ap**
CO -3	analyze two dimensional geometric transformations and view it	**PSO – 4**	**An**
CO -4	apply three dimensional concepts for transformation and viewing	**PSO – 4**	**Ap**
CO - 5	apply various visible surface detection methods	**PSO – 4**	**Ap**

Modules

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

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	**Overview of graphics Systems**					
	1.	Video Display Device - Refresh CathodeRay tubes	2	Understand fundamental principles display devices	Lecture with PPT	Evaluation through: short test
	2.	Raster Scan Displays - Random Scan Displays	2	Able to distinguish the difference between raster and	Lecture with PPT	Multiple choice questions

				random scan displays		
	3.	Color CRT Monitors - Direct view Storage tubes -Flat Panel Displays	4	To illustrates the types of Displays	Lecture, PPT	Formative Assessment
	4.	Three-Dimensional Viewing Devices	2	To know aboutThree-Dimensional Viewing Devices	Lecture, PPT	
	5.	Stereoscopic and Virtual Reality Systems.	2	To illustrates the types VR systems	Lecture, PPT	
II	**Raster - Scan Systems, Random-Scan Systems,Input device, Output Primitives**					
	1.	Raster - Scan Systems: Video Controller - Random-Scan Systems	3	Able to distinguish the difference between raster and random scan displays	Lecture with PPT	Short test Quiz Formative Assessment
	2.	Input device	4	To explain types of input devices	Lecture, PPT, Demonstartion	
	3	Line Drawing Algorithms-DDA Algorithms	3	To explain DDA Algorithms	Lecture, Demonstartion	

	4.	Bresenham's Line Algorithm-Line Functions-Circle generating Algorithm	2	To explain Bresenham's Algorithms	Lecture, Discussion, PPT	
	5	Properties of Circles-Curve Functions	3	To explain circles and curve functions	Lecture, Demonstration Discussion	
III	**Two-Dimensional Geometric Transformation,Two-DimensionalViewing.**					
	1.	Basic Transformations - Translation - Rotation - Scaling.	4	To explain 2D Transformation.	Lecture, Demonstration	Short test Formative Assessment
	2.	Matrix Representations and Homogeneous Coordinates	2	To explain about reference point and arbitrary point	Lecture, Demonstration	
	3.	Other Transformations: Reflections	2	To know about reflections.	Lecture, Demonstration	
	4.	Windows to view point coordinate Transformations	3	To understand about windows view point	Lecture, PPT	
	5.	Clipping Operations - Point Clipping - Line Clipping - Curve Clipping - Text Clipping - Exterior Clipping	2	To understand about clipping	Lecture, PPT	

IV	**Three Dimensional Concepts**					
	1.	Three-Dimensional Display method - Parallel projection - Depth cueing -visible line and surface	4	Able to explain 3D Concepts	Lecture	Short test Assignment on data types, variables Formative Assessment
	2.	Three Dimensional Geometric and modelling Transformations:Translation - Rotation	3	Recall about transformations.	Lecture with PPT Discussion	
	3.	Scaling - Composite Transformations	2	Recall about scaling	Lecture with PPT	
	4.	Viewing pipeline - Viewing Coordinates - Projections - Parallel Projections - Perspective Projections.	5	Recall about Three Dimensional Viewing	Lecture with PPT	
V	**Visible Surface Detection Methods**					
	1.	Classification Visible Surface Detection Algorithms	3	Understand the basic concepts visible surface detection	Lecture, Discussion	Short test Formative Assessment
	2.	Back Face Detection - Depth - Buffer Method - A-Buffer Method	4	Understand the detection methods	Lecture with PPT	

	3.	Scan line method - Depth sorting method - BSP tree method - Area Subdivision Method.	5	Understand the detection methods	Lecture, PPT, Discussion	

Course Instructor: V.R. BithiahBlessie **HOD:** Mrs. J.AntoHepzieBai

Semester VI

Name of the Course : Operating Systems: Design principles

Course Code : SC2063

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

Objectives:

1. To introduce basic concepts and functions of operating systems and understand the concept of process, thread and resource management.
2. To understand various Memory, I/O and File management techniques.

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO -1	Understand the basic concepts of an Operating System and the various system calls	**PSO – 1**	**U**
CO -2	Classify the various processes and threads use for interprocess communication	**PSO – 2**	**AN**
CO -3	Describe the various scheduling & memory management techniques and the page replacement techniques used for memory management	**PSO - 4**	**U**

CO -4	Understand the mutual exclusion deadlock detection and recovery for operating systems	**PSO – 1**	**U**
CO -5	Apply the concepts of input/output and file/directory implementation	**PSO – 4**	**AP**

Modules

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

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	**Operating System Introduction**					
	1.	Introduction	2	To be able to know about the basics of Operating System.	Lecture, Discussion	Multiple choice questions, Quiz, Assignments Evaluation through: short test Formative Assessment
	2.	Different kinds of operating system	4	To understand the types of OS	Lecture , PPT	
	3.	Operating system concepts	2	To know the OS Concepts	Lecture, Discussion	
	4.	Processes-Address Spaces	3	To understand the basic concept processes and address spaces	Lecture, PPT Discussion	
	6.	Files-Input/Output-Protection-The Shell	4	To know the Files,Security and Shell	Lecture with PPT Illustration,	
	7.	System calls-Operating system structure.	4	To understand system calls and OS structure	Lecture, Discussion	

II	**Processes and Threads**					
	1.	Processes	2	To analyze various form factors of operating system	Lecture, Discussion	Quiz Short test Formative Assessment
	2.	Process Model	2	To be able to know the states of operating system process	Lecture, PPT Discussion	
	3.	Process creation and termination	2	To elaborate the OS processor	Lecture with PPT Illustration	
	4.	Process Hierarchies, States and Implementations	2	To learn about input output process control	Lecture , PPT	
	5.	Threads .	5	To be able to identify the threads in process	Lecture	
	6.	Inter process communication.	5	To find out the principles of OS	Lecture, Discussion	
III	**Scheduling ,Memory Management**					
	1.	Scheduling	2	To learn about Scheduling	Lecture with PPT Illustration	Short test Formative Assessment Multiple choice questions, Quiz, Assignments
	2.	Memory Management	2	To be able to manage all the requirements in the memory	Lecture, Illustration	
	3.	Memory Abstraction	2	To understand about memory abstraction	Lecture, Illustration	
	4.	Virtual Memory	2	To know virtual memory	Lecture with PPT Illustration	

	5.	Pagereplacement algorithms	2	To be able to understand Pagereplacement algorithms	Lecture with Illustration	
IV	**Deadlocks**					
	1.	Resources	2	To understand the types of Resources	Lecture with Illustration	Short test Formative Assessment
	2.	Introduction to deadlocks	2	To be able to identify the deadlock characterization	Lecture with PPT Illustration	
	4.	Deadlock Detectionand recovery	3	To learn how to detect the deadlock in OS	Lecture with PPT Illustration	
	5.	Deadlock avoidance	2	To learn how to avoid deadlock	Lecture with PPT Illustration	
	6.	Deadlock Prevention	2	To be able to prevent deadlock	Lecture with PPT Illustration	
	7	Multiple Processor System, Multiprocessors	3	To be able to understand multiple processors	Lecture	
V	**Input/Output**					
	1.	Principles of I/O Hardware	3	To understand Principles of I/O Hardware	Lecture with PPT Illustration	Short test Formative Assessment Quiz Short test
	2.	Principles of I/O Software	3	To understand Principles of I/O Software	Lecture with PPT Illustration	
	3.	File Systems: Files	2	To be able to understand file concepts	Lecture with PPT Illustration	
	4.	Directories	3	To be able to understand Directory concepts	Lecture with PPT Illustration	

	5.	File System Implementation	3	To be able to know how to implement file system	Lecture with PPT Illustration	

Course Instructor: Dr. F.FanaxFemy **HOD:**Ms.J. AntoHepziBai

Mrs.V.R.BithiahBlessie

Semester VI

Name of the Course : PHP Programming

Course Code : SC2064

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

Objectives:

1. To learn and use open source database management system MySQL
2. To create dynamic web pages and websites.
3. To connect web pages with database.

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO -1	analyze PHP scripts and determine their behavior.	**PSO – 2**	**AN**
CO -2	design web pages with the ability to retrieve and present data from a MySQL database.	**PSO –1**	**C**
CO -3	create PHP programs that use various PHP library functions, and that manipulate files and directories.	**PSO – 1**	**C**
CO -4	construct PHP scripts to create dynamic web content.	**PSO –1**	**C**

Modules

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

Unit	Section	Topics	Lecture hours	Learning Outcome	Pedagogy	Assessment/ Evaluation
I	**Introducing PHP, Using Variables and Operators**					
	1.	Basic development Concepts, Creating first PHP Scripts	2	To be able to say the components needed to build PHP applications. To be able to create a PHP script	Lecture with PPT	Evaluation through: short test Multiple choice questions Formative Assessment
	2.	Using Variable and Operators, Storing Data in variable	3	To be able to create, store and use variables.	Lecture with PPT, Demonstration, Illustration by examples	
	3.	Understanding Data types, Setting and Checking variables Data types	2	To be able to understand PHP's simple data types To be able to set and check the data types of the variables.	Lecture with PPT, Illustration by examples	
	4.	Using Constants	2	To be able to create and use constants	Lecture Demonstration with examples	

	5.	Manipulating Variables with Operators	3	To be able to perform arithmetical operations, logical tests, concatenate strings, compare variables	Lecture with PPT, Illustration by examples	
II	**Controlling Program Flow,**					
	1.	Writing Simple Conditional Statements	3	To be able to use conditional statements like simple if, if-else	Lecture with PPT	Short test Quiz Formative Assessment
	2.	Writing More Complex Conditional Statements Elements and Attributes	3	To be able to use complex conditional statements like if- elseif-else, switch-case	Lecture with PPT	
	3.	Repeating Action with Loops	3	To be able to automate repetitive tasks with while, do-while, for, for-each, combining loops, skipping loops	Lecture, Group Discussion	
	4.	Working with String and Numeric Functions.	3	To be able to gain experience with PHP's built-in string and numeric functions	Lecture, Illustration by examples, Discussion	

III	**Working with Arrays**					
	1.	Storing Data in Arrays	2	To be able to create, store, assign, modify array values	Lecture with PPT, Demonstration, Illustration by examples	Short test Formative Assessment
	2.	Processing Arrays with Loops and Iterations	2	To be able to process array contents with the foreach loop	Lecture, Group Discussion	
	3.	Using Arrays with Forms	1	Tobe able to use array with web forms	Lecture, PPT, Group Discussion	
	4.	Working with Array Functions	3	To be able to sort, merge, add, modify and split arrays using PHP's built-in functions	Lecture, PPT, Illustration by examples	
	5.	Working with Dates and Times	3	Tobe able to check if a date is valid or convert between time zones.	Lecture, PPT, Illustration by examples	
IV	**Using Functions and Classes, Working with Files and Directories**					
	1.	Creating User-Defined Functions	3	To be able to create their own	Lecture	

				functions.	with PPT	Slip test
	2.	Creating Classes	2	To be able to create classes.	Lecture with PPT, Illustration by examples	Assignment Quiz
	3.	Using Advanced OOP Concepts	2	To be able to create their classes with OOP concept.	Lecture with PPT, Demonstration, Illustration by examples	Formative Assessment
	4.	Working with Files and Directories: Reading Files	2	To understand to open close and read a file.	Flipped class	
	5.	Writing Files, Processing Directories	2	To be able to write into the file.	Lecture with PPT, Demonstration, Illustration by examples	Group discussion
V	**Working with Databases and SQL, Working with XML**					
	1.	Introducing Database and SQL	2	To be able to define tables.	Lecture with PPT, Discussion	

	2.	Using MySQL, Adding and modifying Data	2	To be able to insert data into a table and can modify.	Lecture with PPT	Short test
	3.	Handling Errors, Using SQLite Extension	2	To understand error handling mechanisms.	Lecture with PPT, Group Discussion	Formative Assessment
	4.	PDO Extension	2	To be able to define PDO.	Lecture, Discussion	
	5.	Introduction XML	2	To recall XML with HTML.	Lecture with PPT	
	6.	Simple XML	2	To be able to understand the functions of XML.	Flipped class	Slip test
	7.	DOM	2	To know about DOM.	Lecture with PPT.	Quiz

Course Instructor: J. Anto Hepzie Ba Bai

M. Nithila

HOD:J. Anto Hepzie