DEPARTMENT OF COMPUTER SCIENCE

B.Sc Teaching Plan for the Academic Year 2023-2024

Semester II, IV, VI

Programme Educational Objectives (PEOs)

PEO	Upon completion of UG Degree Programme, the graduates will be able to:
PEO – 1	apply appropriate theory and scientific knowledge to participate in activities that support humanity and economic development nationally and globally, developing as leaders in their fields of expertise.
PEO – 2	inculcate practical knowledge for developing professional empowerment and entrepreneurship and societal services.
PEO – 3	pursue lifelong learning and continuous improvement of the knowledge and skills with the highest professional and ethical standards.

Programme Outcomes (POs)

PO	Upon completion of B.Sc. Degree Programme, the graduates will be able to:
PO – 1	obtain comprehensive knowledge and skills to pursue higher studies in the relevant field of science.
PO – 2	create innovative ideas to enhance entrepreneurial skills for economic independence.
PO – 3	reflect upon green initiatives and take responsible steps to build a sustainable environment.
PO – 4	enhance leadership qualities, team spirit and communication skills to face challenging competitive examinations for a better developmental career.
PO – 5	communicate effectively and collaborate successfully with peers to become competent professionals.
PO – 6	absorb ethical, moral and social values in personal and social life leading to highly cultured and civilized personality
PO – 7	participate in learning activities throughout life, through self-paced and self-directed learning to develop knowledge and skills.

Programme Specific Outcomes (PSOs)

PSOs	Upon completion of the B.Sc. Degree Programme, the graduates will be able to:
PSO – 1	obtain sufficient knowledge and skills enabling them to undertake further studies in Computer Science and its allied areas on multiple disciplines linked with Computer Science.
PSO - 2	evaluate and apply emerging technologies in computer science to develop innovative solutions for real-world problems
PSO – 3	develop a range of generic skills helpful in team building, problem solving, technical ability, employment, internships, communication and societal activities.
PSO - 4	communicate effectively, work collaboratively, and demonstrate ethical and professional attitudes in diverse settings.
PSO - 5	sensitize various economic issues related to Development, Growth, International Economics, Sustainable Development and Environment

Department : Computer Science

Class : I B.Sc. Computer Science

Title of the Course : Core Course II: Data Structure and Algorithms

Semester : II

Course Code : SU232CC1

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SU232CC1	4	1	-	5	5	75	25	75	100

Objectives

1. To impart the basic concepts of data structure and algorithms.
2. To acquaint the student with the basics of the various data structures and make the students knowledgeable in the area of data structures.

Course Outcomes

CO	Upon completion of this course, students will be able to:	PSO addressed	CL
CO - 1	recall the basic data structures like arrays, linked lists, stacks, queues, trees and graphs.	PSO-1	K1 (R)
CO - 2	understand and apply basic sorting and searching algorithms.	PSO-2	K2 (U) & K3 (AP)
CO - 3	apply data structures and algorithms to solve real-world problems in different domains like databases, and networking.	PSO-2	K3 (AP)

Teaching plan

Total Contact hours: 75(Including lectures, assignments and tests)

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment / Evaluation
I	**Introduction to Data Structures**					
	1	Abstract Data Types (ADTs) - List ADT -	2	K1(R)	Brain Storming, Content Based	Questioning
	2	Array-based Implementation	1	K1(R)	Demonstrative, Computational Thinking	Group Discussion
	3	Linked List Implementation - Singly Linked Lists - Circular Linked Lists	3	K1(R)	Demonstrative, Computational Thinking.	Oral Presentation
	4	Doubly-linked Lists,	3	K1(R)	Demonstrative, Computational	JAM

		Applications of Lists			Thinking	
	5	Polynomial Manipulation - All Operations – Insertion, Deletion	3	K1(R)	Blended Learning, Computational Thinking	Slip Test
	6	Merge, Traversal.	3	K1(R)	Blended Learning, Computational Thinking	Group Discussion
II	**Stack and Queue**					
	1	Stack ADT– Operations – Applications	2	K1(R)	KWL	Questioning
	2	Evaluating Arithmetic Expressions	3	K1(R)	Lecture Method	WordCloud
	3	Conversion of Infix to Postfix Expression	3	K1(R)	Inquiry – based approach Experimental Learning	Online Quiz
	4	Queue ADT- Operations	2	K1(R)	KWL	JAM
	5	Circular Queue	1	K1(R)	Demonstrative, Computational Thinking	Oral Presentation
	6	Priority Queue - deQueue	3	K1(R)	Blended Learning, Computational Thinking	Group Discussion
	7	Applications of Queues.	1	K1(R)	Computational Thinking	Online Assignment
III	**Trees**					
	1	Tree ADT -	1	K1(R)	Brainstorming, Demonstrative	Questioning
	2	Tree Traversals	2	K1(R)	Demonstrative, Team Teaching	Online Quiz
	3	Binary Tree ADT	1	K1(R)	Lecture Method	Slip Test
	4	Expression Trees	1	K1(R)	Blended Learning	Oral Presentation
	5	Applications of Trees	1	K1(R)	Computational Thinking	Group Discussion
	6	Binary Search Tree ADT	2	K1(R)	Demonstrative, Lecture Method	Group Discussion
	7	Threaded Binary Trees	2	K1(R)	Demonstrative, Lecture Method	JAM
	8	AVL Trees	2	K1(R)	Demonstrative, Lecture Method	Open Book Test

	9	B-Tree - B+ Tree	2	K1(R)	Demonstrative, Lecture Method	Group Discussion
	10	Heap - Applications of Heap.	2	K1(R)	Demonstrative, Lecture Method, Computational Thinking	WordCloud
IV	**Graphs**					
	1	Definition - Representation of Graph - Types of Graph	3	K1(R)	Lecture Method, Blended Learning	Brainstorming
	2	Breadth First Traversal	2	K1(R)	Demonstrative, Lecture Method	Group Discussion
	3	Depth First Traversal	2	K1(R)	Demonstrative, Lecture Method	Group Discussion
	4	Topological Sort	2	K1(R)	Demonstrative, Lecture Method	Descriptive answers
	5	Bi-connectivity	1	K1(R)	Demonstrative, Lecture Method	Open Book Test
	6	Cut Vertex	2	K1(R)	Demonstrative, Lecture Method	Online Quiz
	7	Euler Circuits	2	K1(R)	Demonstrative, Lecture Method	Online Quiz
	8	Applications of Graphs.	1	K1(R)	Computational Thinking	Group Discussion
V	**Searching and Sorting**					
	1	Searching - Linear Search	2	K2(U)	Demonstrative, Lecture Method	JAM
	2	Binary Search	2	K1(R)	Demonstrative, Blended Learning	Group Discussion
	3	Sorting - Bubble Sort	2	K2(U)	Lecture Method, Computational Thinking	Slip Test
	4	Selection Sort	1	K2(U)	Demonstrative, Blended Learning	JAM
	5	Insertion Sort	1	K2(U)	Demonstrative, Blended Learning	JAM
	6	Shell Sort	1	K2(U)	Lecture Method, Computational Thinking	Group Discussion
	7	Radix Sort	2	K2(U)	Computational Thinking	Group Discussion
	8	Hashing - Hash Functions	1	K2(U)	Demonstrative, Blended Learning	Online Quiz

	9	Separate Chaining - Open Addressing	1	K2(U) & K3(Ap)	Lecture Method, Computational Thinking	JAM
	10	Rehashing Extendible Hashing.	2	K2(U) & K3(Ap)	Lecture Method, Computational Thinking	Group Discussion

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Employability

Activities (Em/ En/SD): Make students to write programs using different data structures

Assignment: Applications of queues

Seminar Topic: Applications of lists & heaps

Sample questions

Part A

1. Which of the following is a linear data structure?
   a) Array b) AVL trees c) Binary Trees d) Graphs
2. One can convert an infix expression to a postfix expression using a _____.
3. To represent hierarchical relationship between elements, which data structure is suitable?
   a) Dequeue b) Priority queue c) Tree d) Graph
4. Network is a graph that has weights or cost associated with it. State true or false.
5. A sorting technique which uses binary tree concept such that the label of any node is larger than all the labels in the subtrees, is called _____.
   a) selection sort b) insertion sort c) heap sort d) quick sort

Part B

6. With an example, describe about singly linked list
7. What is a stack? Explain about the operations on stack.
8. Define expression tree. Give an example for inorder traversal of an expression tree.
9. With an example, explain about DFS.
10. Describe overflow handling in Hash Tables

Part C

11. Elaborate Polynomial Addition.
12. Illustrate the use of multiple stacks and queues.
13. Discuss about binary trees.
14. Describe about the applications of Graph.
15. Elucidate shell sort.

Head of the Department **Course Instructor**

Ms. J. Anto Hepzie Bai Dr. R. Reena Rose

Department : Computer Science

Class : I B.Sc Computer Science

Title of the Course : Elective Course II: Discrete Mathematics

Semester : II

Course Code : SU232EC1

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SU232EC1	3	1	-	3	4	60	25	75	100

Pre-requisite:

1.Basic Concepts in Algebra and Set Theory

2. To understand the basic concepts of Functions and Relations.

Learning Objectives:

1. To learn the concepts of Logic, Functions, Permutations, Combinations and Graph models
2. To motivate the students to solve practical problems using Discrete Mathematics.

Course Outcomes

On the successful completion of the course, student will be able to**:**		
1.	remember the basic concepts of permutations, combinations, relations and graphs	**K1 (R) & K2 (U)**
2.	understand the basic concepts of functions and relations.	**K2 (U)**
3.	apply basic counting techniques to solve combinatorial problems.	**K3 (AP) & K5 (E)**
4.	represent discrete objects and relationships using abstract mathematical structures	**K4 (AN) & K5 (E)**
5.	apply graphs in a wide variety of models	**K3 (AP) & K5 (E)**

Teaching Plan

Total Contact Hours: 60 (Including lectures, assignments and tests)

Unit	Module	Topics	Teaching Hours	Cognitive level	Pedagogy	Assessment/Evaluation
I						
	1	Logic: Propositional logic-Logical Equivalence	3	K2(U)	Introductory Session	Simple definitions

	2	Propositions- Conditional Statements	2	K3(Ap)	Problem Solving	MCQ
	3	Truth Tables of Compound Propositions	4	K4(An)	Lecture with Illustration	Class Test
	4	Constructing New Logical Equivalences.	3	K4(An)	Lecture using chalk and talk	Slip Test
II						
	1	Functions: One-to-one and onto Functions.	5	K2(U)	Demonstration	Class Test
	2	Inverse Functions	3	K3(Ap)	Lecture with Illustration	Oral Test
	3	Composition of Functions	3	K4(An)	Gamification	Puzzle
	4	The Graphs of Functions	4	K4(An)	Seminar	Online Quiz
	5	Some Important Functions	3	K2(U)	Inquiry Based Teaching	Preparing MCQ
III						
	1	Counting Principles	5	K3(Ap)	Lecture using PPT	Simple Definitions
	2	The basics of Counting	4	K2(U)	Project Based	MCQ using slido
	3	Permutations	3	K4(An)	Flipped classroom	MCQ using Nearpod
	4	Combinations.	2	K3(Ap)	Blended learning	Formative Assessment Test III
IV						
	1	Relations - Properties of Relation-.	3	K2(U)	Lecture using videos	Solving problems
	2	Relations and their Properties	4	K3(Ap)	Computational learning	Short summary

	3	Functions as Relations	3	K4(An)	Experimental learning	Evaluation through online quiz
	4	Relation on a Set	2	K4(An)	Lecture	Evaluation through exercise problems
	5	Combining Relations	3	K2(U)	Problem solving	Recall steps
V						
	1	Graph- Undirected Graph- Simple Graph-– Theorems- - Null Graph-	5	K2(U)	Lecture with Illustration	Assignment
	2	Directed Graph – Multigraph- Pseudo Graph-	3	K3(Ap)	Experimental learning	Evaluation through online quiz
	3	General Graph- Degree of Vertex	3	K4(An)	Problem solving	Recall steps
	4	Finite Graph- Order of a Graph-Size of a Graph	4	K4(An)	Lecture using chalk and talk	Slip test
	5	Isolated Graph- Isomorphic Graphs	3	K2(U)	Seminar	Quiz

Course Focusing on Employability/Entrepreneurship/Skill Development : Employability

Activities(Em/En/SD) : Evaluation through short test, Seminar

Assignment:1. Relations and their Properties
2. Functions

Seminar Topic: Isolated Graph- Isomorphic Graphs

Sample questions:

Part-A

1. Let p and q be proposition. Then conjunction of p and q is denoted by _____.

a) $p \wedge q$ $b)\ p \vee q$ $c)\ p \subseteq q$ $d) p \oplus q$

2 Say whether the propositions is True or False.

Washington D.C is the capital of the united states of America.

3. If N objects are placed in to k boxes, then there is atleast one box containing atleast _____ objects.

4. Say True or False. Is the “divides” relation on the set of positive integers transitive?

5. A relation on a set a is called an equivalence relation if it is _____, _____ and _____.

Part – B

Answer all the questions

11. Find the conjunction of the propositions p and q where p is the proposition “Today is Friday” and q is the proposition “It is raining today”.

12. Let A, B, and C be Sets. Show that $\overline{A \cup (B \cap C)} = (\overline{C} \cup \overline{B}) \cap \overline{A}$

13. Show that if n is a positive integer, then

$$1 + 2 + 3 + \cdots + n = \frac{n(n+1)}{2}$$

14. If n is a positive integer and r is an integer with $1 \leq r \leq n$, then there are

$P(n,r) = n(n-1)(n-2) \ldots (n-r+1)$.

15. Show that the inclusion relation $\subseteq$ is a partial ordering on the power set of a set S.

Part - C

Answer all the questions

16. What are the contra positive, the converse, and the inverse of the conditional statement “The home team wins whenever it is raining”..

17. Prove that $\overline{A \cap B} = \overline{A} \cup \overline{B}$.

18. The harmonic numbers $H_j, j = 1,2,3,4, \ldots,$ are defined by $H_j = 1 + \frac{1}{2} + \frac{1}{3} + \cdots + \frac{1}{j}$. Use mathematical induction to show that $H_{2^n} \geq 1 + \frac{n}{2}$ whenever n is a nonnegative integer.

19.How many poker hands of five cards can be dealt from a standard deck of 52 cards. Also how many ways are there to select 47 cards from a standard deck of 52 cards.

20.The relation R on a set A is transitive if and only if $R^n \subseteq R$ for n=1, 2, 3, ...

Head of the Department
Mrs.J.Anto Hepzie Bai

Course Instructor
Dr.Y.A.Shiny

Department : Computer Science

Class : I B.Sc. Computer Science

Title of the Course : Skill Enhancement Course SEC - I: Advanced Excel

Semester : II

Course Code : SU232SE1

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SU232SE1	1	-	1	2	2	30	25	75	100

Objectives

3. To learn the advanced features of Excel.
4. To summarise, analyse, explore, and present visualisations of data in the form of charts, graphs.

Course Outcomes

CO	Upon completion of this course, students will be able to:	PSO addressed	CL
CO - 1	use a wide range of advanced excel functions.	PSO-1	K1 (R)
CO - 2	understand data validation rules to control data entry.	PSO-1	K2 (U)
CO - 3	presenting data in the form of charts and graphs.	PSO-2 & PSO-3	K3 (AP)

Teaching plan

Total Contact hours: 30 (Including lectures, assignments and tests)

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment / Evaluation
I	**Basics of Excel**					
	1	Basics of Excel - Customizing Common Options - Absolute and Relative Cells.	1	K1(R) & K2 (U)	Brain Storming, Content Based	Questioning
	2	Protecting and Un-protecting Worksheets and Cells - Working with Functions	1	K1(R) & K2 (U)	Content Based	Group Discussion
	3	Writing Conditional	1	K1(R) & K2 (U)	Demonstrative, Computational	

		Expressions - Logical Functions - Lookup and Reference Functions			Thinking.	Oral Presentation
	4	VlookUP with Exact Match, Approximate Match - Nested VlookUP with Exact Match	1	K1(R) & K2 (U)	Demonstrative, Computational Thinking	JAM
	5	VlookUP with Tables, Dynamic Ranges - Nested VlookUP with Exact Match.	1	K1(R) & K2 (U)	Blended Learning, Computational Thinking	JAM
	6	Using VLookUP to Consolidate Data from Multiple Sheets.	1	K1(R) & K2 (U)	Blended Learning, Computational Thinking	Quiz
II	**Data Validations and Filtering**					
	1	Data Validations - Specifying a Valid Range of Values - Specifying a List of Valid Values	1	K1(R) & K2 (U)	KWL	Questioning
	2	Specifying Custom Validations based on Formula - Working with Templates - Designing the Structure of a Template	1	K1(R) & K2 (U)	Lecture Method	WordCloud
	3	Templates for Standardization of Worksheets - Sorting and Filtering Data	1	K1(R) & K2 (U)	Inquiry – based approach	Online Quiz
	4	Sorting Tables - Multiple-level Sorting - Custom Sorting	1	K1(R) & K2 (U)	KWL	JAM
	5	Filtering Data for Selected View - Advanced Filter Options	1	K1(R) & K2 (U)	Demonstrative, Computational Thinking	Oral Presentation

	6	Working with Reports Creating Subtotals - Multiple-level Subtotal	1	K1(R) & K2 (U)	Blended Learning, Computational Thinking	Group Discussion
III	**Pivot Tables**					
	1	Creating Pivot Tables: Formatting and Customizing Pivot Tables	1	K1(R) & K2 (U)	Brainstorming, Demonstrative	Questioning
	2	Advanced Options of Pivot Tables - Pivot Charts -	1	K1(R) & K2 (U)	Demonstrative, Team Teaching	Online Quiz
	3	Consolidating Data from Multiple Sheets and Files using Pivot Tables	1	K1(R) & K2 (U)	Lecture Method	Slip Test
	4	External Data Sources - Data Consolidation Feature to Consolidate Data	1	K1(R) & K2 (U)	Blended Learning	Oral Presentation
	5	Show Value as % of Row, % of Column, Running Total, Compare with Specific Field	1	K1(R) & K2 (U)	Computational Thinking	Group Discussion
	6	Viewing Subtotal Under Pivot - Creating Slicers.	1	K1(R) & K2 (U)	Demonstrative, Lecture Method	Group Discussion
IV	**Functions**					
	1	More Functions: Date and Time Functions - Text Functions - Database Functions	1	K1(R) & K2 (U)	Lecture Method, Blended Learning	Brainstorming
	2	Power Functions – Formatting using Auto Formatting Option for Worksheets -	1	K1(R) & K2 (U)	Demonstrative, Lecture Method	Group Discussion
	3	Using Conditional Formatting	1	K1(R) & K2 (U)	Demonstrative, Lecture Method	Group Discussion

	4	Option for Rows, Columns and Cells	1	K1(R) & K2 (U)	Demonstrative, Lecture Method	Descriptive answers
	5	WhatIf Analysis - Goal Seek	1	K1(R) & K2 (U)	Demonstrative, Lecture Method	Open Book Test
	6	Data Tables - Scenario Manager.	1	K1(R) & K2 (U)	Demonstrative, Lecture Method	Online Quiz
V	**Charts and Graphs**					
	1	Charts - Formatting Charts	1	K3(Ap)	Demonstrative, Blended Learning	JAM
	2	3D Graphs - Bar and Line Chart Together	1	K3(Ap)	Demonstrative, Blended Learning	Group Discussion
	3	Secondary Axis in Graphs	1	K3(Ap)	Computational Thinking	Slip Test
	4	Sharing Charts with PowerPoint / MS Word, Dynamically -	1	K3(Ap)	Demonstrative, Blended Learning	JAM
	5	New Features of Excel Sparklines, Inline Charts,	1	K3(Ap)	Demonstrative, Blended Learning	Online Assignment
	6	Data Charts - Overview of all the New Features.	1	K3(Ap)	Lecture Method, Computational Thinking	Group Discussion

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Skill Development

Activities (Em/ En/SD): Make students to write procedures to use advanced excel features

Assignment: New Features of Excel Sparklines, Inline Charts

Seminar Topic: WhatIf Analysis - Goal Seek

Sample questions

Part A

1. Which function in Excel is used to search for a value in the first column of a table and return a value in the same row from another column?
   a) VLOOKUP b) HLOOKUP c) INDEX d) MATCH
2. Data validation in Excel allows users to restrict data entry by specifying a list of valid values, but it cannot be based on custom validations using formulas. (True/False)
3. Pivot tables allow users to _____ and _____ data from multiple sheets or files, aiding in comprehensive data analysis.

4. Which Excel feature allows users to automatically format worksheets based on predefined criteria?
   a) Auto Formatting b) Conditional Formatting c) Goal Seek d) Data Tables
5. Which Excel feature allows users to combine bar and line charts in a single graph?
   a) Secondary Axis b) 3D Graphs c) Sparklines d) Data Charts

Part B

6. Explain the difference between absolute and relative cell references in Excel. Provide examples of when each type of reference would be used and illustrate how they function within formulas.

7. Discuss in detail how data validation can be applied to specify a valid range of values, a list of valid values, and custom validations based on formulas.

8. Explain the process of creating a pivot table in Excel, detailing the steps involved in formatting and customizing pivot tables.

9. Discuss the role of Power Functions in performing complex calculations and analyses within Excel.

10. Elaborate on the concept of integrating bar and line charts together, highlighting scenarios where this combined representation can provide comprehensive insights into data analysis.

Part C

11. How VLOOKUP can be used to consolidate data from multiple sheets? Providing a step-by-step guide along with an example scenario.

12. Illustrate the process of creating a template in Excel. Explain the steps involved in designing the structure of a template and its role in standardizing worksheets.

13. Elaborate on the use of subtotals in pivot tables and the process of creating slicers for enhanced data filtering and analysis within pivot tables.

14. Explore the usage of formatting options such as Auto Formatting and Conditional Formatting in Excel, highlighting how they enhance data presentation and analysis within worksheets.

15. Provide an overview of the new features in Excel such as Sparklines, Inline Charts, and Data Charts, highlighting their benefits and practical applications in data analysis and presentation.

Head of the Department
Ms. J. Anto Hepzie Bai

Course Instructor
Dr. R. Reena Rose

Department : Computer Science

Title of the Course : Non Major Elective NME II: Introduction to HTML

Semester : II

Course Code : SU232NM1

Course Code	L	T	P	S	Credits	Inst. Hours	Total Hours	Marks		
								CIA	External	Total
SU232NM1	1	1	-	-	2	2	30	25	75	100

Objectives

1. To create a web page, insert a graphic, link, table within a web page.
2. To insert ordered and unordered lists within a web page.

Course Outcomes

CO	Upon completion of this course, the students will be able to:	PSO addressed	Cognitive level
CO – 1	recall and recognize HTML tags and their syntax.	**PSO – 1**	**K1 (R) & K2 (U)**
CO – 2	understand the use of HTML elements like headings, paragraphs, lists and links.	**PSO – 2**	**K2 (U)**
CO – 3	apply the concepts in creating web pages and formatting it.	**PSO – 4**	**K3 (AP)**

Teaching plan

Total Contact hours: 30 (Including lectures, assignments and tests)

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment/ Evaluation
I	**Introduction**					
	1.	Web Basics: Define Internet	1	K1(R)	Lecture, Discussion	Group Discussion
	2.	Web Browsers	2	K2(U)	Analysis of Web Browsers	Presentation
	3	Define Webpage	1	K3(Ap)	Lecture with PPT	Asking questions
	4	HTML Basics: Understanding Tags.	2	K2(U)	Practical Exercises	Ask to create simple web page using basic tags
II	**Tags**					
	1.	Tags for Document Structure (HTML, Head, Body Tag).	2	K1(R)	Lecture, Discussions	Quiz
	2.	Block Level Text Elements: Headings Paragraph (<p> tag)	2	K2(U)	Case Studies, Practical Examples	Written Assignment
	3.	Font Style Elements: (bold, italic, font, small, strong, strike, big tags).	2	K3(Ap)	Hands-on Exercises	To develop a web page using font tags
III	**Lists**					
	1.	Types of Lists: Ordered, Unordered – Nesting Lists	2	K1(R)	Demonstration using PPT	Give some exercise
	2.	Other Tags: Marquee, HR, BR	2	K3(Ap)	Hands-on Exercises	Ask to write a HTML program using simple tags
	3.	Using Images, Creating Hyperlinks.	2	K2(U)	Demonstrate the program in Text editor	Presentation
IV	**Tables**					
	1.	Creating Basic Table, Table Elements	2	K1(R)	Lecture, Discussions	Quiz
	2.	Caption – Table and Cell Alignment	2	K2(U)	Case Studies, Examples	Written Assignment
	3.	Rowspan, Colspan , Cellpadding.	2	K3(Ap)	Case Studies	Presentation

V	**Frames**					
	1.	Frameset – Targeted Links.	2	K3(Ap)	Lectures, Discussions	Quiz, Recall Questions
	2.	Noframe, Forms: Input, Textarea	2	K2(U)	Group Discussions	Analysis of Case Studies, Conceptual Questions
	3.	Select, Option.	2	K3(Ap)	Practical Exercises, Hands-on Activities	Ask to develop a program to create a simple web site.

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Skill Development

Activities (Em/ En/SD): 1. Skill Development: Create a Web site using HTML Tags

Assignment: Table Creation

Seminar Topic: Font Style elements

Sample questions

Part A (2 Marks)

1. What is Internet?
2. Name any two web browsers.
3. Write the structure of HTML Program.
4. Which tag is used to load the image in web page?
5. Mention the use of hyperlink tag.

Part B (4 Marks)

6. Discuss with web pages with example.
7. Illustrate the uses of <p> and <br> tags
8. What is the use of <Frameset> tag?
9. Short notes on internet.
10. Differentiate Text and Text Area

Part C (8 Marks)

11. Explain the Font style elements tag
12. How can you create the table & explain with example
13. Discuss types of list tags.
14. Create one Form using necessary Form elements tags
15. Create one web site in your own.

Head of the Department
Mrs.J.Anto Hepzie Bai

Course Instructor
Dr.F.Fanax Femy

Department : **Computer Science**

Class : **II B.Sc Computer Science**

Title of the Course : **Major Core V: UNIX and Shell Programming**

Semester : **IV**

Course Code : **SC2141**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SC2141	4	1	-	4	5	75	30	70	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.

Course Outcomes

CO	Upon completion of this course the students will be able to:	PSO addressed	Cognitive Level
CO - 1	identify set of commands in UNIX	**PSO - 2**	**K1 (R)**
CO - 2	describe the features & functions of an operating system.	**PSO - 2**	**K2 (U)**
CO - 3	customize environment settings using a text editor	**PSO - 3**	**K2 (U)**
CO - 4	demonstrate UNIX commands for file handling and process control	**PSO - 4**	**K3 (AP)**
CO - 5	combine several simple commands in order to produce more powerful operations.	**PSO - 2**	**K3 (AP)**
CO - 6	utilize system utilities to perform administrative tasks	**PSO - 1**	**K3 (AP)**
CO - 7	analyze the working of the user defined commands and will be able to change the permissions associated with files.	**PSO - 3**	**K4 (AN)**
CO - 8	create and manage simple file processing operations, organize directory structures with appropriate security	**PSO - 3**	**K6 (C)**
CO - 9	create, delete, move and rename files and directories	**PSO - 4**	**K6 (C)**

Teaching plan

Total Contact hours: 75 (Including lectures, assignments and tests)

Unit	Module	Topic	Teaching hours	Cognitive Level	Pedagogy	Assessment/ Evaluation
I	**Getting Started, The UNIX Architecture and Command Usage, General Purpose Utilities**					
	1.	The Operating System, The UNIX Operating System	3	**K1 (R), K2 (U)**	Brainstorming, Lecture with PPT	Simple definitions, Creating Poll using Slido
	2.	The UNIX Architecture, Features of UNIX	4	**K1 (R), K2 (U)**	Flipped classroom	Nearpod Quiz
	3.	Locating Command, Internal and External Commands	3	**K2 (U)**	Lecture with PPT	Group Discussions
	4.	Command Structure, Flexibility of Command Usage	2	**K1 (R)**	Blended Classroom	Questioning
	5.	cal, date, echo, bc, printf, script, passwd, who, tty, uname	4	**K3 (AP), K6 (C)**	Experimental Learning	Google classroom Quiz
II	**The File System, Handling Ordinary Files, Basic File Attributes**					
	1.	The File, The HOME Variable	2	**K1 (R), K2 (U)**	Brainstorming, Lecture with PPT	Short test
	2.	pwd, cd, mkdir, rmdir, Absolute and Relative Pathnames	3	**K3 (AP), K4 (AN)**	Demonstration of experiments	Surprise Test
	3.	ls: Listing Directory Content, The UNIX File System	2	**K1 (R), K2 (U)**	Inquiry -based approach	Peer Review
	4.	cat, cp, rm, mv, lp, file, wc, od, cmp, comm, diff	4	**K3 (AP), K6 (C)**	Experiential Learning	Open book test
	5.	ls -l: Listing File Attributes, File Ownership, File Permissions, chmod	3	**K3 (AP)**	Lecture with PPT	Assignments

	6.	Changing File Ownership	2	**K3 (AP)**	Lecture Method	Class Test
III	**The VI Editor, The Shell**					
	1.	vi Basics, Input Mode	3	**K2 (U)**	Demonstration of experiments	Short test
	2.	Entering and Replacing Text, Saving Text and Quitting	2	**K2 (U)**	Demonstration of experiments	MCQ using nearpod
	3.	The ex Mode, Navigation, Editing Text, Undoing Last Editing Instructions, Searching for a Pattern	4	**K2 (U)**	Demonstration of experiments	Discussions
	4.	Pattern Matching	3	**K4 (AN)**	Lecture with Demonstration	Simple Questioning
	5.	Escaping and Quoting	3	**K1 (R), K2 (U)**	Lecture with Demonstration	Seminar
	6.	Pipes, tee, Shell Variables	2	**K1 (R), K2 (U)**	Lecture with PPT	Group Discussions
IV	**The Process, Customizing the Environment, More File Attributes**					
	1.	ps: Process Status, Mechanism of Process Creation	2	**K2 (U)**	Lecture Method	Short test
	2.	Running Jobs in Background, nice: Job Execution with Low Priority, Killing Processes with Signals, at and batch: Execute Later	3	**K3 (AP)**	Blended Learning	Peer Review
	3.	Environment Variables, The Common Environment Variables	3	**K1 (R), K2 (U)**	Lecture with PPT	Quiz using Mentimeter
	4.	File Systems and Inodes	2	**K1 (R), K2 (U)**	Brainstroming	Seminar
	5.	The Directory, umask: Default File and Directory Permissions, find: Locating Files.	4	**K1 (R), K2 (U)**	Experiential Learning	Online Assignments

V	Simple Filters, Filters Using Regular Expressions, Essential Shell Programming					
	1.	The Sample Database, pr, head, tail, cut, paste	2	**K3 (AP)**	Lecture with Demonstration	Short test
	2.	sort, grep	3	**K3 (AP)**	Lecture with Demonstration	Making them to use the command through practical
	3.	Shell Scripts, read: Making Scripts Interactive, Using Command Line Arguments	2	**K3 (AP)**	Demonstration of experiments	Recall steps
	4.	The Logical Operators && and || -- Conditional Execution, The if Conditional, The case Conditional	2	**K3 (AP)**	Demonstration of experiments	Suggest idea with examples
	5.	while: Looping, for: Looping with a List, Debugging Shell Scripts with set –x	3	**K3 (AP)**	Demonstration of experiments	Asking to write programs

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Skill Development

Activities (Em/ En/SD): Making students to work in UNIX Operating System and to create program in vi editor.

Assignment: find: Locating files and uploading in Google Classroom

Seminar Topic: Escaping and Quoting

Sample questions:

Part A

1. The * is also known as ----------.

   a) metacharacter b) betacharacter c) meta d) beta

2. Ordinary file is also known as ----------.

   a) directory file b) device file c) regular file d) none

3. Vi uses the term ---------- for copying text.
4. The three operators used in find command are !, -o and -a. Say “True” or “False”

5. The extension for shell script is ----------.

Part B

6. Distinguish the difference between internal and external commands.
7. How do you create and remove a directory in UNIX?
8. List the input commands in vi editor.
9. How do you kill processes with signals in UNIX?
10. Write a short note on sort command in UNIX.

Part C

11. Elucidate the features of UNIX.
12. Explain the chmod command in UNIX.
13. Illustrate the concept of pattern matching in UNIX.
14. Discuss the various common environment variable in UNIX.
15. Discuss while and for loop with suitable examples.

Head of the Department
J. Anto Hepzie Bai

Course Instructor
J. Anto Hepzie Bai

Department : **Computer Science**

Class : **II B.Sc. Computer Science**

Title of the Course : **Major Elective I: Software Engineering**

Semester : **IV**

Course Code : **SC2142**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SC2142	4	-	-	3	4	60	30	70	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

Course Outcome

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**	**K3 (AP)**
CO -2	develop, maintain and evaluate large-scale software systems.	**PSO – 4**	**K6 (C)**
CO -3	produce efficient, reliable, robust and cost-effective software solutions.	**PSO - 4**	**K6 (C)**
CO -4	ability to work as an effective member or leader of software engineering teams.	**PSO – 2**	**K3 (AP)**
CO -5	ability to manage time, processes and resources effectively by prioritising competing demands to achieve personal and team goals	**PSO – 2**	**K2 (U)**

Teaching Plan

Total Contact hours: 60 (Including lectures, assignments and tests)

Unit	Module	Topic	Teaching hours	Cognitive Level	Pedagogy	Assessment/ Evaluation
I	**Introduction to Software Engineering**					
	1.	Software Engineering Discipline, Evolution & Impact.	2	K2(U), K4(An)	Blended Classroom	Brainstorm Questions, MCQ

	2.	Programs Vs Software Products, Software Life Cycle.	2	K3(Ap), K2(U)	Lecture cum Demonstration and Interactive 3D diagrams	Just a Minutes
	3.	Models: Classical Waterfall Model, Iterative Waterfall Model, Prototyping Model, Evolutionary Model and Spiral Model.	4	K3(Ap)	Group Discussion	Discussions, Questioning
	4.	Software Project Management: Responsibilities of a Software Project Manager.	3	K3(Ap)	Lecture with interactive ppt and vlogs	Mentimeter Quiz and Short test
	5.	Project Planning and Risk Management.	3	K3(Ap)	Lecture with Nearpod presentation	Quiz with nearpod
II	**Requirements Analysis and Specification**					
	1.	Requirements Gathering and Analysis.	3	K3(Ap)	Blended Classroom	Gamified assessment.
	2.	Software Requirements Specification (SRS): Users of SRS Document	3	K6(C)	Inquiry Based Learning	Quiz
	3.	Characteristics of a Good SRS Document.	3	K3(Ap), K6(C)	Collaborative Learning	Evaluation through short test
	4.	Attributes of Bad SRS Documents and Software Design:	3	K4(An), K6(C)	Lecture, Illustration by examples,	Suggest idea with examples
	5.	Characteristics of a Good Software Design, Cohesion and Coupling	3	K2(U)	Flipped Classrooms	Concept Explanations

III	**User Interface Design**					
	1.	Characteristics of a Good User Interface, Basic Concepts.	4	K3(Ap)	Inquiry Based Learning	Short test
	2.	Types of User Interfaces, Coding and Testing.	3	K3(Ap)	Lecture, Group Discussion	Discussions, Questioning
	3.	Coding, Testing: Basic Concepts & Terminologies	3	K6(C)	Interactive PPT	Slip Test
	4.	Testing Activities, UNIT Testing, Black-Box Testing, White-Box Testing	4	K2(U), K3(Ap)	Lecture cum demonstration	Polls
	5.	Debugging and Integration Testing.	2	K3(Ap)	Interactive PPT	Polls
IV	**Function-Oriented Software Design**					
	1.	Overview of SA/SD Methodology and Structured Analysis.	3	K3(Ap)	Technology based Learning	Just a minutes
	2.	Data Flow Diagrams (DFDs). Object Modelling Using UML: UML Diagrams and Use Case Model	3	K2(U)	Lecture with Group learning	Mentimeter quiz
	3.	Representation of Use Cases. Why Develop Use Case Diagram, how to identify the Use Cases of a system	4	K4(An)	Lecture with Demonstration	Slip test and Polls
	4.	Class Diagrams, Interaction Diagrams and State Chart Diagram.	4	K4(An)	Flipped Classrooms	Just a Minutes.

V	Software Reliability and Quality Management					
	1.	Software Reliability, Statistical Testing, Software Quality, Software Quality Management System.	3	K2(U)	Inquiry Based Learning	Short test
	2.	ISO 9000: What is ISO 9000 Certification, ISO 9000 for Software Industry	3	K2(U)	Interactive PPT with YouTube videos	Write a program to back face detection.
	3.	Computer Aided Software Engineering: CASE Environment, CASE support in Software Life Cycle.	3	K3(Ap)	Lecture with demonstration	Short summary
	4.	Characteristics of CASE Tools - Software Maintenance: Characteristics of Software Maintenance.	4	K3(Ap)	Blended Learning	Concept Explanations
		Software Reverse Engineering, Software Maintenance Process Models.	3	K3(Ap)	Inquiry Based Learning	Online quiz

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Entrepreneurship

Activities (Em/ En/SD): To Create Invitation Using Any App.

Assignment : ISO Certification

Seminar Topic: Computer Aided Software Engineering.

Sample questions:

Part A

1. Write the Expansion of CASE.

2. _____ is a software development activity that is not a part of software processes.
3. Software is defined as _____

   a) set of programs, documentation & configuration of data b) set of programs

   c) documentation and configuration of data d) None
4. What are the features of Software Code?

   a) Simplicity b) Accessibility c) Modularity d) All of the above
5. Why do bugs and failures occur in software?

   a) Because of Developers b) Because of companies

   c) Because of both companies and Developers d) None of the mentioned

Part B

6. Differentiate Classical waterfall model and Iterative Waterfall model.
7. Discuss Evolution and Impact of software Engineering.
8. Describe the Characteristics of Good SRS Document.
9. Explain the types of User Interfaces.
10. Write the characteristic of software maintenance.

Part C

11. Illustrate Software Life Cycle Diagram.
12. Explain the Requirement gatherings and analysis of Software Engineering.
13. Write the difference between Black-box testing and White Box Testing.
14. Explain Class Diagrams, Interaction Diagrams and State Chart Diagram.
15. Describe Software maintenance process models.

Head of the Department **Course Instructor**

Mrs. J.Anto Hepzie Bai Mrs.C.Sherisha.

Department : **Computer Science**

Class : **II B.Sc. Computer Science**

Title of the Course : **Allied IV: Discrete Mathematics**

Semester : **IV**

Course Code : **SA2141**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SA2141	2	1	-	3	3	45	30	70	100

Pre-requisite:

Basic Concepts in Algebra and Set Theory

Learning Objectives:

1. To learn the concepts of Logic, Functions, Permutations, Combinations and Graph models
2. To motivate the students to solve practical problems using Discrete Mathematics.

Course Outcomes

On the successful completion of the course, student will be able to**:**		
1.	remember the basic concepts of permutations, combinations, relations and graphs	**K1 (R) & K2 (U)**
2.	understand the basic concepts of functions and relations.	**K2**
3.	apply basic counting techniques to solve combinatorial problems.	**K3 (AP) & K5 (E)**
4.	represent discrete objects and relationships using abstract mathematical structures	**K4 (AN) & K5 (E)**
5.	apply graphs in a wide variety of models	**K3 (AP) & K5 (E)**

Total Contact Hours: 45 (Including lectures, assignments and tests)

Unit	Module	Topics	Teaching Hours	Cognitive level	Pedagogy	Assessment/ Evaluation
I	**Logic**					
	1	Logic: Propositional logic-Logical Equivalence	3	K2(U)	Lecture	Quiz

	2	Propositions- Conditional Statements	2	K3(Ap)	Lecture with Group Discussion	Cass Test
	3	Truth Tables of Compound Propositions	2	K4(An)	Lecture with Illustration	Class Test
	4	Constructing New Logical Equivalences.	2	K4(An)	Lecture	SlipTest
II	**Functions**					
	1	One-to-one & onto functions	3	K2(U)	Lecture	Class Test
	2	Inverse Functions	3	K3(Ap)	Lecture with Illustration	Oral Test
	3	Composition of functions	3	K4(An)	Lecture	Formative Assessment Test II &III
	4	The graphs of functions	3	K4(An)	Seminar	Online Quiz
III	**Sequences and Summations**					
	1	Sequences and Special integer sequences	4	K3(Ap)	Lecture with Illustration	Online Assignment
	2	Summations	3	K2(U)	Lecture with Illustration	Quiz
	3	Recursive definitions	3	K4(An)	Lecture	Slip Test
IV	**Counting**					
	1	The basics of counting	2	K2(U)	Lecture with Illustration	Formative Assessment Test II&III
	2	Permutations	3	K3(Ap)	Lecture	Oral Test
	3	Combinations	3	K4(An)	Lecture with Illustration	Online Quiz
V	**Relations**					
	1	Relations and their Properties	3	K2(U)	Lecture with Illustration	Assignment

	2	Graphs models	3	K3(Ap)	Lecture with Illustration	Formative Assessment Test III
	3	directed and undirected graphs	3	K4(An)	Lecture	Test

Course Focusing on Employability/Entrepreneurship/Skill Development : Employability

Activities(Em/En/SD) : Evaluation through short test, Seminar

Assignment: The basics of counting
Seminar Topic: permutation and combination

Part-A

1. What is the logical equivalence of "NOT (p AND q)"?

a) NOT p AND NOT q b) NOT p OR NOT q
c) p OR q d) p AND q

2. In a one-to-one function, what can be said about the images of distinct elements in the domain?

a) They are the same. b) They are different

c) They can be the same or different. d) There is not enough information.

3. What is the sum of the first 5 terms of the arithmetic sequence with a first term (a) of 3 and a common difference (d) of 2?

a) 15 b) 25 c) 35 d) 45

4. How many ways can a committee of 3 people be selected from a group of 8 individuals?
a) 24 b) 56 c) 84 d) 120

5. In a directed graph, if there is a path from vertex A to vertex B, but no path from B to A, what type of relation does?

Part – B

Answer all the questions

6. Find the conjunction of the propositions p and q where p is the proposition “Today is Friday” and q is the proposition “It is raining today”.

7. Let A, B, and C be Sets. Show that $\overline{A \cup (B \cap C)} = (\overline{C} \cup \overline{B}) \cap \overline{A}$

8. Show that if n is a positive integer, then

$$1 + 2 + 3 + \cdots + n = \frac{n(n+1)}{2}$$

9. If n is a positive integer and r is an integer with $1 \leq r \leq n$, then there are

$P(n,r) = n(n-1)(n-2) \ldots (n-r+1)$.

10. What are the properties of relations and how are they modeled in the context of directed and undirected graphs?

PART C (5×8=40 Marks)

Answer all the question

11. What are the contra positive, the converse, and the inverse of the conditional statement "The home team wins whenever it is raining".

12. Prove that $\overline{A \cap B} = \overline{A} \cup \overline{B}$.

13. The relation R on a set A is transitive if and only if $R^n \subseteq R$ for n=1, 2, 3, ...

14. How many poker hands of five cards can be dealt from a standard deck of 52 cards. Also how many ways are there to select 47 cards from a standard deck of 52 cards.

15. How do directed and undirected graphs serve as models for different types of relations?

Head of the Department
Ms. J. Anto Hepzie Bai

Course Instructor
Dr. P.C. Priyanka Nair

Department : Computer Science

Class : III B.Sc Computer Science

Title of the Course : Major Core IX: Android Programming

Semester : VI

Course Code : SC2161

Course Code	L	T	P	S	Credits	Inst. Hours	Total Hours	Marks		
								CIA	External	Total
SC2161	4	1	-	-	4	5	75	30	70	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.

Course Outcome:

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	K2 (U)
CO -2	apply the fundamental paradigms and technologies to develop mobile applications	PSO - 2	K3 (AP)
CO -3	create a simple application that runs under the Android operating system	PSO - 4	K6 (C)
CO -4	develop an application that uses multimedia under Android operating system	PSO - 4	K6 (C)
CO -5	implement various methods in Android to create mobile applications for communication network	PSO - 2	K3 (AP)

Teaching Plan

Total Contact hours: 75 (Including lectures, assignments and tests)

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment / Evaluation
1	**Fundamentals of Java for Android Application Development**					
	1	Introduction to Java, Introducing Java Dalvik Virtual Machine, Developing a Simple Java Program	3	K2(U)	Lecture Method	PPT
	2	Interfaces,Inheritance, Getting an Overview of Android	4	K3(Ap)	Demonstration	PPT and Quiz
	3	Introducing Android , Discussing about Android Applications , The Manifest File , Downloading and Installing Android	5	K3(Ap)	Collaboration	Interactive PPT
	4	Exploring the Development Environment , Developing and Executing the First Android Application	5	K3(Ap)	Lecture Method	PPT
2	**Using Activities, Fragments and Intents in Android**					
	1	Working with Activities, Creating an activity,Starting an activity	4	K6(C)	Lecture Method	PPT
	2	Managing the Life cycle of an activity , Applying Themes and styles to an activity, Hiding the title of the activity	5	K2(U) & K3(Ap)	Case Study	Problem Solving
	3	Using Intents: Exploring Intent Objects – Fragments	4	K2(U)	Demonstration	PPT and Quiz
3	**Working with the User Interface Using Views and View Groups**					
	1	Working with View Groups, The Linear Layout Layout, The Relative Layout, The Frame Layout	5	K2(U) & K3(Ap)	Collaboration	Interactive PPT
	2	Working with Views , Binding Data with the Adapterm View Class	4	K2(U) & K3(Ap)	Collaboration	Interactive PPT

	3	Designing the Auto Text Complete View,Implementing the Screen Orientation , Creating Menus	5	K2(U) & K3(Ap)	Demonstration	PPT and Quiz
4	**Handling Pictures and Menus with Views**					
	1	Working with Image Views,Designing Context Menu for Image View ,Notifying the User	5	K3(Ap) &K6(C)	Reflective Thinking	PPT
	2	Storing the Data Persistently, Introducing the Data Storage Options, Using the Internal Storage,Using the External Storage	5	K3(Ap) &K6(C)	Lecture Method	Brain Storm
	3	Emailing and Networking in Android: Building an Application to Send Email	4	K3(Ap) &K6(C)	Simulation	MCQ
5	**Working with Graphics and Animation**					
	1	Working with Graphics, Using the Drawable Object, Using the Shape Drawable Object, Working with Animations	5	K2(U) & K3(Ap)	Simulation	Brain Storm
	2	Audio, Video, and Camera, Role of Media Playback, Using Media Player	4	K2(U) & K3(Ap)	Reflective Thinking	PPT
	3	Media Formats Supported by Media Player, Preparing Audio for Playback, Preparing Video for Playback	5	K2(U) & K3(Ap)	Reflective Thinking	Creative

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Employability

Activities (Em/ En/SD): Making students to creating video

Assignment: Exploring Intent Objects – Fragments

Seminar Topic: Working with Graphics

Sample questions

Part A

1. What is the primary purpose of the Dalvik Virtual Machine (DVM) in the context of Android development?

a. Running Java applications on a computer

b. Converting Java bytecode into machine code for Android devices

c. Managing Android device memory

d. Creating graphical user interfaces

2. What is the purpose of an Intent in Android development?
3. Say True or False.The Manifest file in Android development is used to define the layout of the app.
4. Which layout in Android allows you to arrange child views either horizontally or vertically in a single line?

a. Relative Layout b. Frame Layout c. Linear Layout d. Grid Layout

5. True or False: You can hide the title of an activity in Android by using the hideTitle() method.

Part B

6. Explain about the Developing a Simple Java Program?
7. Ellaborate the Designing Context Menu for Image View.
8. Discuss about Managing the Life cycle of an activity.
9. Different between Internal Storage and external storage.
10. Give briefly about Working with Animations.

Part C

11. Elaborate on the life cycle of an Android activity.
12. Differentiate between explicit and implicit intents, providing examples for each.
13. Discuss the role of View Groups in Android layouts.
14. Explain the role of the Drawable object in Android graphics and provide a code snippet illustrating its use in an Android application.
15. Describe the purpose of a context menu in Android. Provide an example of how to design a context menu for an Image View.

Head of the Department
J. Anto Hepzie Bai

Course Instructor
M. Monisha

Department : **Computer Science**

Class : **III B.Sc. Computer Science**

Title of the Course : **Major Core X: Computer Graphics**

Semester : **VI**

Course Code : **SC2162**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SC2162	4	-	-	4	4	60	30	70	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

Course Outcome

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**	**K2 (U)**
CO -2	use the digital scan and copy systems accordingly	**PSO –1**	**K1 (R)**
CO -3	analyse two dimensional geometric transformations and view it	**PSO – 4**	**K4 (An)**
CO -4	apply three dimensional concepts for transformation and viewing	**PSO – 4**	**K3 (Ap)**
CO - 5	apply various visible surface detection methods	**PSO – 4**	**K3 (Ap)**

Teaching Plan
Total Contact hours: 60 (Including lectures, assignments and tests)

Unit	Module	Topic	Teaching hours	Cognitive Level	Pedagogy	Assessment/ Evaluation
I	**OVERVIEW OF GRAPHICS SYSTEM**					
	1.	Video Display Device and Refresh Cathode Ray tubes.	3	K2(U), K4(An)	Blended Classroom	Brainstorm Questions, MCQ

	2.	Raster Scan Displays and Random Scan Displays.	3	K3(Ap), K2(U)	Lecture cum Demonstration and Interactive 3D diagrams	Just a Minutes
	3.	Color CRT Monitors, Direct view Storage tubes.	2	K3(Ap)	Group Discussion	Discussions, Questioning
	4.	Flat Panel Displays.	3	K3(Ap)	Lecture with interactive ppt and vlogs	Mentimeter Quiz and Short test
	5.	Three-Dimensional Viewing Devices	3	K3(Ap)	Lecture with nearpod presentation	Quiz with nearpod
II	**Two-Dimensional Geometric Transformation**					
	1.	Raster - Scan Systems: Video Controller, Random-Scan Systems.	3	K3(Ap)	Blended Classroom	Program Writing
	2.	Input device: Keyboard, Mouse, Trackball, Space ball and Joysticks.	3	K6(C)	Inquiry Based Learning	Quiz
	3.	Data Glove, Digitizers, Image Scanners, Touch Panels, Light pens, Voice Systems.	3	K3(Ap), K6(C)	Collaborative Learning	Evaluation through short test
	4.	Hard-Copy Devices, Output Primitives: Line Drawing Algorithms, DDA Algorithms.	3	K4(An), K6(C)	Lecture, Illustration by examples,	
	5	Bresenham's Line Algorithm, Circle generating Algorithm, Properties of Circles.	3	K2(U)	Flipped Classrooms	Gamified assesment

III	**BASIC TRANSFORMATION**					
	1.	Basic Transformations Translation Rotation, Scaling . Clipping.	4	K3(Ap)	Inquiry Based Learning	Short test
	2.	Other Transformations : Reflections	4	K3(Ap)	Lecture, Group Discussion	Discussions, Questioning
	3.	Two-Dimensional Viewing: Windows to view point coordinate Transformations	4	K6(C)	Interactive PPT	
	4.	Clipping Operations, Point Clipping , Line Clipping , Curve Clipping, Text Clipping and Exterior	4	K2(U), K3(Ap)	Lecture cum demonstration	Polls
IV	**THREE DIMENSIONAL CONCEPTS**					
	1.	Three-Dimensional Display method, Parallel projection, Depth cueing - visible line and surface. Perspective Projections.	3	K3(Ap)	Technology based Learning	Just a minutes
	2.	Three Dimensional Geometric and modelling Transformations	3	K2(U)	Lecture with Group learning	Mentimeter quiz
	3.	Translation, Rotation, Scaling and Three Dimensional Viewing: Viewing Pipeline	4	K4(An)	Lecture with Demonstration	Slip test and Polls
	4.	Coordinates, Projections,	4	K4(An)	Flipped Classrooms	Just a Minutes.

		Parallel Projections.				
V	**VISIBLE SURFACE DETECTION METHODS:**					
	1.	Classification of Visible Surface Detection Algorithms.	4	K2(U)	Inquiry Based Learning	Short test
	2.	Back Face Detection, A-Buffer Method.	4	K2(U)	Interactive PPT with YouTube videos	Write a program to back face detection.
	3.	Scan line method, Depth sorting method.	4	K3(Ap)	Lecture with demonstration	Short summary
	4.	BSP tree method, Area Subdivision Method.	4	K3(Ap)	Blended Learning	Concept Explanations

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Entrepreneurship

Activities (Em/ En/SD): To Create computer science department logo using any app.

Assignment : Three Dimensional Geometric and modelling Transformations.

Seminar Topic: Classification Visible Surface Detection Algorithms and Back Face Detection algorithm.

Sample questions:

Part A

1. Among the given scientists/inventor who is known as the father of Computer Graphics?

   a) Nikola Tesla b) Ivan Sutherland c) Ada Lovelace d) Marie Curie

2. Which of the following plane is used for 2D transformations?

   a) Three-dimensional Plane b) Two-dimensional Plane

   c) Four-dimensional Plane d) One dimensional Plane

3. _____ is the purpose for using clipping in computer graphics.

4. Viewing transformation is the process of mapping a world window in World Coordinates to the Viewport. Say T/F.

5. Which of the following algorithm is a faster method for calculating pixel positions?

   a) Parallel line algorithm b) Mid-point algorithm

   c) DDA line algorithm d) Bresenham's line algorithm

Part B

6. Differentiate CRT Display and FPD Display.
7. Describe Line Drawing Algorithm.
8. Explain Two-Dimensional viewing.

9. Illustrate Parallel Projection and Perspective Projection.
10. Enumerate BSP tree method.

Part C

11. Describe Direct View Storage Tubes.
12. Write the difference between Raster Scan System and Random Scan System.
13. Write the details about Clipping operations.
14. Explain Three dimensional Geometric and modelling Transformations.
15. Explain Area Sub division methods.

Head of the Department | **Course Instructor**

Mrs. J.Anto Hepzie Bai | Mrs.C.Sherisha.

Department : Computer Science

Class : III B.Sc Computer Science

Title of the Course : Major Core XI: Operating Systems: Design Principles

Semester : VI

Course Code : SC2163

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SC2163	3	-	1	3	4	60	30	70	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.

Course Outcome:

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**	**K2(U)**
CO -2	classify the various processes and threads use for interprocess communication	**PSO – 2**	**K4(AN)**
CO -3	describe the various scheduling & memory management techniques and the page replacement techniques used for memory management	**PSO - 4**	**K2(U)**
CO -4	understand the mutual exclusion deadlock detection and recovery for operating systems	**PSO – 1**	**K2(U)**
CO -5	apply the concepts of input/output and file/directory implementation	**PSO – 4**	**K3(AP)**

Teaching plan

Total Contact hours: 60 (Including lectures, assignments and tests)

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment / Evaluation
1	**Different kinds of Operating System**					
	1	Introduction, Different kinds of Operating System, Mainframe Operating System, Multiprocessor, Personal, Handheld Operating System	4	K2(U)	Flipped classroom	PPT
	2	Operating System Concepts, Processes, Address Spaces, Files, Input/Output ,System calls	3	K2(U)	KWL	Just a Minuet
	3	Operating system structure, Layered System, Client server Model	3	K2(U)	Flipped classroom	PPT
2	**Processes and Threads**					
	1	Processes and Threads, Thread Usage, Classical Thread Model	3	K2(U) & K3(Ap)	Lecture Method	Brain Storm
	2	Inter process communication, Race Condition, Critical Region	3	K2(U) & K3(Ap)	Flipped classroom	PPT
	3	Mutual Exclusion with Buzy Waiting, Semaphore	3	K2(U) & K4(An)	KWL	Just a Minuet
3	**Scheduling**					
	1	Introduction, Scheduling in Batch Systems, Scheduling in Interactive Systems	3	K3(Ap)	Collaboration	Interactive PPT
	2	Scheduling in Real Time Systems, Policy Versus Mechanism, Thread Scheduling	3	K2(U) & K3(Ap)	Flipped classroom	PPT
	3	Memory	4	K2(U) &	Demonstration	

		Management: Address Space, Swapping, Managing Free Memory		K3(Ap)		PPT and Quiz
	4	Virtual Memory, Paging, Page Table, Page Replacement Algorithms	4	K2(U) & K3(Ap)	Case Study	Problem Solving
4	**Deadlocks**					
	1	Introduction, Resources, Preemptable and Non preemptable resources, Resource Acquisition Introduction to deadlocks: Condition for Resource Deadlock, Deadlock Modeling	5	K2(U) & K4(An)	Demonstration	PPT
	2	Deadlock Detection and Recovery ,Deadlocks avoidance, Deadlock prevention	5	K2(U) & K3(Ap)	Case Study	Problem Solving
	3	Multiple Processor system: Multiprocessor Hardware, Multiprocessor Operating System Types	4	K2(U) & K4(An)	Demonstration	PPT
5	**Input / Output**					
	1	Input / Output: Principles of I/O hardware: I/O Devices, Device Controllers, Memory Mapped I/O, Direct Memory Access	4	K2(U) & K4(An)	Demonstration	PPT
	2	Direct Memory Access, Principles of I/O Software, Programmed I/O, Interrupt Driven I/O	3	K2(U) & K3(Ap)	Case Study	Problem Solving

	3	Files systems, Files, Directories, Files Systems Implementation	3	K4(An)	Collaboration	Brainstorming

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Employability

Activities (Em/ En/SD): Making students to creating program.

Assignment: Memory Management.

Seminar Topic: Deadlocks.

Sample Question

Part A

1. What type of operating system is designed for personal use?
   a) Mainframe Operating System b) Multiprocessor Operating System
   c) Personal Operating System d) Handheld Operating System
2. Say true or false. Classical Thread Model involves dividing a process into multiple threads that share the same resources.
3. What is the purpose of Virtual Memory?
4. Say True or False: Multiprocessor Hardware refers to a computer system with multiple processors working independently.
5. What is used to perform I/O operations without involving the CPU?
   a) Programmed I/O b) Interrupt Driven I/O
   c) Memory Mapped I/O d) Direct Memory Access

Part B

6. Explain the concept of a Layered System in operating system architecture. Provide advantages and disadvantages.
7. Explain the role of a Page Table in virtual memory management. How does it facilitate address translation?
8. Describe the conditions necessary for a resource deadlock to occur.
9. Explain the concept of Memory Mapped I/O and its advantages in the context of I/O operations.
10. Discuss the characteristics of a "Client-Server Model" in operating systems. Explain how this model facilitates distributed computing.

Part C

11. Describe the characteristics of a Client-Server Model in operating system structure.
12. Discuss the Classical Thread Model in detail.
13. Discuss the role of page replacement algorithms in virtual memory.
14. Explain the concept of deadlock detection and recovery. What are the challenges associated with these processes?
15. Illustrate the principles of Memory Mapped I/O. How does it enhance I/O operations?

Head of the Department **Course Instructor**

J. Anto Hepzie Bai M. Monisha

Department : **Computer Science**

Class : **III B.Sc Computer Science**

Title of the Course : **Major Core XII: Computer Networks**

Semester : **VI**

Course Code : **SC2164**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SC2164	4	-	-	4	4	60	30	70	100

Objectives:

1. To understand the concept of Computer network
2. To impart knowledge about networking and inter networking devices.

Course Outcome

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO -1	independently understand basic computer network technology.	**PSO – 1**	**U(k2)**
CO -2	understand and explain Data Communications System and its components.	**PSO – 2**	**U(k2)**
CO -3	identify the different types of network topologies and protocols	**PSO - 3**	**U(k2)**
CO -4	enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.	**PSO – 3**	**R(K1)**
CO -5	apply the different types of network devices and their functions within a network	**PSO – 3**	**AP(k4)**
CO -6	familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.	**PSO –4**	**AP(k4)**

Teaching Plan

Total Contact hours: 60 (Including lectures, assignments and tests)

Unit	Module	Topic	Teaching hours	Cognitive Level	Pedagogy	Assessment/ Evaluation
I	**Introduction to Computer Networks**					
	1.	Introduction – Network Hardware: LAN, and WAN.	2	K2(U), K4(An)	Blended Classroom	Brainstorm Questions, MCQ

	2.	Software: Protocol Hierarchies and Design Issues for the layers-	2	K3(Ap), K2(U)	Lecture cum Demonstration and Interactive 3D diagrams	Just a Minutes
	3.	Connection Oriented and Connectionless Services.	4	K3(Ap)	Group Discussion	Discussions, Questioning
	4.	Reference Models: OSI and TCP/IP Models, Example	3	K3(Ap)	Lecture with interactive ppt and vlogs	Mentimeter Quiz and Short test
	5.	Network: Internet, Physical Layer, Guided Transmission Media.	3	K3(Ap)	Lecture with Nearpod presentation	Quiz with nearpod
II	**Network Communication**					
	1.	Wireless Transmission, Communication.	2	K3(Ap)	Blended Classroom	Gamified assessment.
	2.	Satellites: Geostationary Satellites- Medium Earth Orbit Satellites	3	K6(C)	Inquiry Based Learning	Quiz
	3.	Satellites: Low Earth Orbit Satellites.	3	K3(Ap), K6(C)	Collaborative Learning	Evaluation through short test
	4.	Telephone System: Structure of Telephone System, Local Loop: Modem, ADSC and Switching.	4	K4(An), K6(C)	Lecture, Illustration by examples,	Suggest idea with examples
	5.	Data Link Layer: Design Issues, Error Detection and Correction.	3	K2(U)	Flipped Classrooms	Concept Explanations
III	**Computer Networks Protocol**					
	1.	Elementary Data Link Protocols:	4	K3(Ap)	Inquiry Based Learning	Short test

		Simplex protocol. Multiple Access Protocols.				
	2.	Stop and Wait Protocol, Sliding Window Protocols.	3	K3(Ap)	Lecture, Group Discussion	Discussions, Questioning
	3.	Medium Access Layer – Channel Allocation Problem	4	K6(C)	Interactive PPT	Polls
	4.	Carrier Sence Multiple Access Protocols, Collision Free Protocols	4	K2(U), K3(Ap)	Lecture cum demonstration	Polls
IV	**OSI Layers**					
	1.	Network Layer - Design Issues: Store and Forward Packet Switching.	3	K3(Ap)	Technology based Learning	Just a minute
	2.	Services Provided to the Transport Layer, Comparison of Virtual Circuit and Datagram Subnet.	3	K2(U)	Lecture with Group learning	Mentimeter quiz
	3.	Routing Algorithms: Shortest Path Routing, Distance Vector Routing, Hierarchical Routing	3	K4(An)	Lecture with Demonstration	Slip test and Polls
	4.	Congestion Control Algorithms: Principles of Congestion Control.	3	K4(An)	Flipped Classrooms	Just a Minutes.
		Congestion Prevention Policy, IP Protocol, IP	3	K4(An)	Interactive PPT	Gamified Assessment

		Addresses, Internet Control Protocols.				
V	**OSI Layer: Transport Layer**					
	1.	Transport Layer, Services, Connection Management:	4	K2(U)	Inquiry Based Learning	Word Cloud
	2.	Addressing, Establishing and Releasing a Connection.	4	K2(U)	Interactive PPT with YouTube videos	Write a program to back face detection.
	3.	Simple Transport Protocol, internet Transport Protocols (ITP).	4	K3(Ap)	Lecture with demonstration	Short summary
	4.	Network Security: Cryptography.	4	K3(Ap)	Blended Learning	Online Quiz

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Entrepreneurship

Activities (Em/ En/SD): To create topology Model.

Assignment : Crptography

Seminar Topic: Network Layer.

Sample questions:

Part A

1. Which of the following is an example of Bluetooth?
   a) wide area network b) virtual private network
   c) local area network d) personal area network
2. Which of the following computer networks is built on the top of another network?
   a) overlay network b) prime network
   c) prior network d) chief network
3. What is the full form of OSI?
   a) optical service implementation b) open service Internet
   c) open system interconnection d) operating system interface
4. Write the Expansion of OSI
5. _____ topology is best suited for large businesses which must carefully control and coordinate the operation of distributed branch outlets.

Part B

6. Differentiate WAN and LAN Networks
7. Discuss Evolution of Computer Networks
8. Describe the types of Network Topology
9. Explain Data Link Layer
10. Write the details note about network Layer.

Part C

11. Illustrate Protocols and design issues for the layers.
12. Difference between Medium earth Orbit satellite and Low Earth Orbit Satellite.
13. Explain Carrier sense Multiple access Protocol.
14. Explain Session Layer.
15. Discuss Network security algorithms.

Head of the Department
Mrs. J.Anto Hepzie Bai

Course Instructor
Mrs.C.Sherisha

Department : **Computer Science**

Class : **III B.Sc Computer Science**

Title of the Course : **Major Elective III: PHP Programming**

Semester : **VI**

Course Code : **SC2165**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SC2165	3	-	1	3	4	60	30	70	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.

Course Outcomes

CO	Upon completion of this course the students will be able to:	PSO addressed	Cognitive Level
CO - 1	analyze PHP scripts and determine their behavior.	**PSO - 2**	**K4 (AN)**
CO - 2	design web pages with the ability to retrieve and present data from a MySQL database.	**PSO - 1**	**K3 (AP) & K6 (C)**
CO - 3	recall the basic key elements, various PHP library functions, and that manipulate files and directories.	**PSO - 1**	**K1 (R)**
CO - 4	understand the control flow statements in scripts to create dynamic web content.	**PSO - 1**	**K2 (U)**

Teaching plan

Total Contact hours: 60 (Including lectures, assignments and tests)

Unit	Module	Topic	Teaching hours	Cognitive Level	Pedagogy	Assessment/ Evaluation
I	**Introducing PHP, Using Variables and Operators**					
	1.	Basic development Concepts, Creating first PHP Scripts	2	**K1 (R), K6 (C)**	Brainstorming	Making students to create a script
	2.	Using Variable and Operators, Storing Data in variable	3	**K1 (R), K2 (U)**	Flipped classroom	MCQ using Nearpod
	3.	Understanding Data types, Setting and	2	**K1 (R), K2 (U)**	Blended Learning	Open book test

		Checking variables Data types				
	4.	Using Constants	2	**K1 (R), K2 (U)**	Lecture with PPT	Questioning
	5.	Manipulating Variables with Operators	3	**K1 (R), K2 (U)**	Group Discussion	Slip test
II	**Controlling Program Flow**					
	1.	Writing Simple Conditional Statements	3	**K3 (AP)**	Demonstration of experiments	Short test
	2.	Writing More Complex Conditional Statements	3	**K3 (AP)**	Demonstration of experiments	Seminar
	3.	Repeating Action with Loops	3	**K3 (AP)**	Demonstration of experiments	Ask to write programs
	4.	Working with String and Numeric Functions.	3	**K3 (AP)**	Creating Video using Zoom	MCQ using Slido
III	**Working with Arrays**					
	1.	Storing Data in Arrays	2	**K1 (R), K2 (U)**	Brainstorming	Quiz
	2.	Processing Arrays with Loops and Iterations	2	**K1 (R), K2 (U)**	Group Discussion	MCQ using mentimeter
	3.	Using Arrays with Forms	1	**K1 (R), K2 (U)**	Inquiry-based approach	Questioning
	4.	Working with Array Functions	3	**K1 (R), K2 (U)**	Creating video using Zoom	Class test
	5.	Working with Dates and Times	3	**K1 (R), K2 (U)**	Flipped Classroom	Group Discussions
IV	**Using Functions and Classes, Working with Files and Directories**					
	1.	Creating User-Defined Functions	3	**K3 (AP)**	Demonstrative	Slip test
	2.	Creating Classes	2	**K3 (AP)**	Inquiry -based approach	Ask to write programs
	3.	Using Advanced OOP Concepts	2	**K3 (AP)**	Lecture with PPT	Group Discussion
	4.	Working with Files and Directories: Reading Files	2	**K2 (U), K3 (AP)**	Flipped classroom	Surprise Test
	5.	Writing Files, Processing Directories	3	**K2 (U)**	Lecture with PPT	Simple definitions

V	Working with Databases and SQL, Working with XML					
	1.	Introducing Database and SQL	3	**K1 (R), K2 (U)**	Brainstorming	Questioning
	2.	Adding and modifying Data	2	**K1 (R), K2 (U)**	Inquiry-based learning	Recalling
	3.	Handling Errors, Using SQLite Extension	2	**K1 (R), K2 (U)**	Lecture with PPT	Questioning
	4.	Introduction XML	2	**K1 (R), K2 (U)**	Flipped classroom	Group Discussion
	5.	Simple XML	2	**K1 (R), K2 (U)**	Lecture with illustration	Slip test
	6.	DOM Extension	2	**K1 (R), K2 (U)**	Lecture with PPT	Quiz

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Employability

Activities (Em/ En/SD): Making students to design websites.

Assignment: Data types & Constants and uploading in Google Classroom

Seminar Topic: Writing More Complex Conditional Statements

Sample questions:

Part A

1. The function ---------- is used to destroy a variable.
   a) inset() b) unset() c) delete() d) remove()
2. Constants are defined using ---------- function.
   a) define() b) declare() c) const() d) def()
3. Name the function to delete a file.
4. An ArrayIterator provides a ready-made, extensible tool to loop over array elements. Say “True” or “False”
5. The abbreviation of XML is ----------

Part B

6. Discuss the various data types in PHP.
7. Describe the various built-in numeric functions in PHP.
8. List out the various built-in array manipulation functions with suitable examples.
9. Analyze XML with a suitable example.
10. Explain the switch-case statement with a suitable example.

Part C

11. How do you create a script in PHP?
12. Elaborate the various built-in string manipulation functions in PHP.

13. How do you create a form using arrays? Discuss it with an example?
14. How do you read and write a file in PHP?
15. Describe XML and DOM extension in PHP.

Head of the Department
J. Anto Hepzie Bai

Course Instructor
J. Anto Hepzie Bai

Department : Computer Science

Class : III B.Sc Computer Science

Title of the Course : Skill Enhancement Course (SEC): Photoshop CS6

Semester : VI

Course Code : SSK206

Course Code	L	T	P	S	Credits	Inst. Hours	Total Hours	Marks		
								CIA	External	Total
SSK206	1	1	-	-	2	2	30	50	50	100

Objectives

1. To enable students to create images for web design, logos, graphics, layouts, image touch-ups and colour enhancement.
2. To develop the skills for manipulating the images creatively.

Course Outcome

CO	Upon completion of this course the students will be able to :	PSO addressed	CL
CO -1	understand retouch and repair a scanned photograph.	PSO –1	K3(AP)
CO -2	create abilities to use Photoshop that are employable and rewarding.	PSO – 3	K6(C)
CO -3	understand how to do basic photo repairs and color enhancements techniques.	PSO –1	K3(AP)
CO -4	define and apply the basic functions of pixel selection, painting and editing tools	PSO - 4	K1(R)
CO -5	understand file compression, Import and export files and save files in different formats	PSO –1	K4(AN)
CO -6	utilize retouching features to make pictures perfect	PSO - 1	K6(C)

Teaching plan

Total Contact hours: 30 (Including lectures, assignments and tests)

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment / Evaluation
1	**Starting Photoshop CS6**					
	1	Starting Photoshop CS6, Getting Started with Photo shop CS6, Opening an Existing File	3	K2(U) & K4(An)	Experiential Learning	Questioning
	2	The Photoshop Program Window, Guidelines for Working with Toolbox, Screen Modes	3	K2(U) & K4(An)	Demonstration using Photoshop Screen	Interactive PPT
	3	Creating a New File, Saving Files, Removing Files, Closing File	2	K2(U) & K3(Ap)	Demonstration	Seminar
2	**Working with Images**					
	1	Working with Images, Vector and Bitmap Images, Opening Recently used Files, Image Size	3	K1(R) & K4(An)	Inquiry-Based Learning	MCQ using Slido
	2	Image Resolution, Editing Images, Opening Files Created in Illustrator or Freehand	2	K2(U) & K3(Ap)	Flipped Classroom	Group Discussion
	3	Color Modes, Setting a Current Foreground and Background Colors, File Formats	2	K1(R), K6(C) & K4(An)	Lecture using Videos	Asking to change foreground and background colors
3	**Making Selections**					
	1	Making Selection, The Grow and Similar Commands, Moving a Portion of an Image, Editing Selections	3	K2(U), K3(Ap) & K6(C)	Lecture using Videos	Make students to edit images
	2	Copying a Selection	2	K2(U) &	Experiential	Ask to apply

		into another Image, Filling a Selection, Transforming Selections		K3(Ap)	Learning	colors to images
4	**Painting, Drawing and Retouching Tools**					
	1	The painting Tools, The Drawing Tools, The Retouching Tools	3	K2(U) & K3(Ap)	Lecture using Demonstration	Asking students to work with various tools
	2	Layers, Layers Palette, Working with Layers	2	K2(U) & K6(C)	Lecture Method	Peer Review
5	**Filters**					
	1	The Filter Menu, Filter Gallery, Extract Filter, Liquify Filter	3	K1(R) & K4(An)	Experiential Learning	Making students to apply filters to an image
	2	Vanishing Point Filter, Artistic Filters, Blur Filters, Brush Stroke Filters	3	K2(U), K3(Ap) & K6(C)	Experiential Learning	Making students to apply filters to an image

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Employability

Activities (Em/ En/SD): Making students to create Logo, Business Card, Photo Editing

Assignment: Layers

Seminar Topic: The painting Tools, The Drawing Tools

Sample Question

Part A

1. Which option is used to create a new file in Photoshop CS2?

a. Open b. Save c. New d. Close

2. Which command is used to fill a selection with a color in Photoshop CS2?

a. Copy b. Paste c. Fill d. Stroke

3. Which tool in Photoshop CS2 is used for retouching imperfections in an image?

a. Brush Tool b. Clone Stamp Tool c. Pencil Tool d. Eraser Tool

4. Where can you find the "Filter Gallery" in Photoshop CS2?

a. Image menu b. Layer menu c. Filter menu d. Window menu

5. What is the purpose of the "Grow" command in making selections?

Part B

6. How can they be useful in different stages of your design process?
7. Compare and contrast vector and bitmap images. Discuss situations where you might prefer to use one over the other in a design project.

8. Explain the transforming selections add to the flexibility of your design?
9. How does the Layers Palette contribute to non-destructive editing?
10. Discuss how this filter can be used creatively in image editing and manipulation.

Part C

11. Ellaborate the applications and creative uses of these filters in image editing and enhancement.
12. Discuss the functionality and applications of drawing tools and retouching tools.
13. Explain the use of the Grow and Similar commands in selection operations.
14. Explore the process of editing images and opening files created in Illustrator.
15. Illustrate the Guidelines for Working with Toolbox.

Head of the Department
J. Anto Hepzie Bai

Course Instructor
M. Monisha
J. Anto Hepzie Bai