Holy Cross College (Autonomous), Nagercoil

Kanyakumari District, Tamil Nadu.

Nationally Accredited with A^+ by NAAC IV cycle – CGPA 3.35

Affiliated to

Manonmaniam Sundaranar University, Tirunelveli

DEPARTMENT OF COMPUTER SCIENCE

SYLLABUS FOR UNDERGRADUATE PROGRAMME

TEACHING PLAN

ODD SEMESTER 2024 – 2025

Vision

To provide a high-quality undergraduate education in computer science that prepares students for productive careers and life long learning.

Mission

1. To demonstrate proficiency in problem-solving techniques using the computer.
2. To demonstrate proficiency in at least two high-level programming languages and two operating systems
3. To show the ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
4. To show the ability to function effectively on teams to accomplish a common goal.
5. To sensitize the students to the social realities around them with the vision of making them responsible citizen.

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 I: Python Programming

Semester : I

Course Code : SU241CC1

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SU241CC1	4	1	-	5	5	75	25	75	100

Objectives:

1. To understand the syntax and semantics of Python programming language.
2. To know the concepts of OOPs and the usage of modules, lists, tuples and files.

Course Outcomes

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO -1	recall python syntax, basic structures and control flow statements	**PSO – 1**	**K1(R)**
CO -2	understand to analyze and debug python code	**PSO - 2**	**K2(U)**
CO -3	write python scripts to solve specific problems	**PSO – 3**	**K3(A)**
CO -4	apply python in creating simple applications or scripts for automation	**PSO - 3**	**K3(A)**
CO -5	create reusable python modules or packages for broader use	**PSO -3**	**K6(C)**

Teaching plan

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

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment/ Evaluation
I	**Basics of Python Programming**					
	1.	History of Python, Features of Python	1	K1(R)	Introductory session	Overview
	2.	Literal, Constants, Variables, Identifiers, Keywords	1	K1(R)	Lecture method	Simple definitions
	3.	Built-in Data Types	2	K1(R)	Lecture using Chalk and talk	Unit Test
	4.	Output Statements, Input Statements, Comments, Indentation	2	K2(U)	PPT	Write simple programs
	5.	Operators	3	K2(U)	Lecture using Chalk and talk	Short essay
	6.	Expressions, Type Conversions	1	K2(U)	PPT	Concept definitions
	7.	**Python Arrays:** Defining and Processing Arrays	2	K3(Ap)	Problem solving	Problem solving questions
	8.	Array methods	3	K3(Ap)	Problem Solving	Problem solving questions
II	**Control and Jump Statements**					
	1.	**Control Statements:** Selection/Conditional Branching Statements: if, if-else	3	K2(U)	Lecture using Chalk and talk	Evaluation through short test
	2.	Nested if and if-elif-else Statements.	3	K3(Ap)	PPT	Slip Test
	3.	Iterative Statements: while loop, for loop	3	K2(U)	Demonstration	MCQ
	4.	else suite in loop and nested loops.	3	K3(Ap)	Demonstration	Class Test
	4.	**Jump Statements:** break, continue and pass Statements**.**	3	K2(U)	Lecture class	Differentiate between various ideas
III	**Functions, Strings and Modules**					
	1.	**Functions:** Function Definition, Function Call, Variable Scope and its Lifetime, Return Statement.	3	K2(U)	PPT	Short essays
	2.	**Function Arguments**: Required Arguments,	3	K2(U)	Lecture using Chalk and talk	Quiz

		Keyword Arguments, Default Arguments and Variable Length Arguments				
	3.	Recursion	3	K3(Ap)	Demonstration	Short test
	4.	**Python Strings:** String Operations, Immutable Strings, Built-in String Methods and Functions, String Comparison	3	K2(U)	Lecture class	True/False
	5.	**Modules**: Import Statement, The Python Module, dir() Function, Modules and Namespace, Defining our own Modules	3	K3(Ap)	Demonstration	Write simple programs
IV	**Lists, Tuples and OOPs Concepts**					
	1.	**Lists:** Creating a list, Access values in List, Updating values in Lists, Nested Lists	2	K2(U)	Lecture using Chalk and talk	Short summary
	2.	Basic List Operations, List Methods.	3	K3(Ap)	Lecture class	Concept explanations
	3.	**Tuples:** Creating, Accessing, Updating and Deleting Elements in a Tuple	2	K3(Ap)	Demonstration	Concept explanation
	4.	Nested tuples, Difference between Lists and Tuples.	3	K2(U)	PPT	Evaluation through short test
	5.	**OOPs Concepts:** Class, Objects, Constructors, Types of Variables, Types of Methods	2	K2(U)	Lecture using Chalk and talk	Concept explanation
	6.	**Inheritance:** Single, Multiple, Multi-level, Hierarchical and Hybrid Inheritance	2	K3(Ap)	Problem solving	Evaluation through short test
	7.	**Polymorphism:** With Functions and Objects, With Class Methods. **Abstraction:** Abstract Classes.	1	K1(R)	Demonstration	Comparative study
V	**File Handling**					
	1.	**Python File Handling:** Types of files in Python,	2	K1(R)	Lecture using Chalk and talk	True/False

		Opening and Closing Files				
	2.	Reading and Writing Files: write () and writelines() Methods, append() Method, read() and readlines() Methods	4	K3(Ap)	Demonstration	Evaluation through problems
	3.	with keyword, Splitting words	2	K3(Ap)	Problem solving	Summarise concept
	4.	File methods	2	K3(Ap)	Demonstration	MCQ
	5.	File Positions	2	K3(Ap)	Problem solving	Short essays
	6.	Renaming and Deleting Files.	3	K2(U)	Lecture using Chalk and talk	Seminar

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

Activities (Em/ En/SD): 1. Write Python code for loops.

2. Write Python code for functions.

3. Write Python code for tuples.

Assignment: Operators, Lists

Seminar Topic: Data Types

Sample questions

Part A

1. Who developed the Python language?

   a) Zim Den b) Guido van Rossum c) Niene Stom d) Wick van Rossum

2. What will be the output of the following Python code?

   ```
   True = False
   while True:
       print (True)
       break
   ```

   a) True b) False c) None d) Error

3. Which keyword is used for function?

   a) Fun b) Define c) def d) Function

4. Suppose listExample is ['h','e','l','l','o'], what is len(listExample)?

   a) 5 b) 4 c) None d) Error

5. To open a file c:\scores.txt for reading, we use _____

   a) infile = open ("c:\scores.txt", "r") b) infile = open ("c:\\scores.txt", "r")

   c) infile = open (file = "c:\scores.txt", "r") d) infile = open (file = "c:\\scores.txt", "r")

Part B

6. Differentiate constants from variables in Python.
7. Write the syntax and an example Python program for nested if statement.
8. What are the different Python string operations?
9. Write notes on nested lists used in Python.
10. How will you open and close a file in Python?

Part C

11. Summarize on arrays used in Python.
12. Discuss about the different iterative statements in Python.
13. Differentiate and explain variable length arguments and default arguments used in Python functions.
14. Explain Dictionaries in detail.
15. Explain reading and writing into a file with a suitable Python program.

Head of the Department
Mrs.J.Anto Hepzie Bai

Course Instructor
Mrs. Sahaya Rose Vigita

Department : Computer Science

Class : I B.Sc Computer Science

Title of the Course : Elective Course I: Numerical Methods

Semester : I

Course Code : SU231EC1

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SU231EC1	3	1	-	3	4	60	25	75	100

Objectives:

1. To realize the basic understanding of numerical algorithms.
2. To implement algorithms to solve mathematical problems on the computer.

Course Outcomes

CO	Upon completion of this course, the students will be able to:	PSO addressed	CL
CO - 1	remember the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for computer problems.	**PSO - 1**	**K1 & K2 (R & U)**
CO - 2	understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.	**PSO - 4**	**K2 & K4 (U & An)**
CO - 3	apply this to solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with software applications.	**PSO - 3**	**K3 & K5 (Ap & C)**
CO - 4	analyze direct methods for solving linear systems.	**PSO - 4**	**K4 & K5 (An & C)**
CO - 5	evaluate methods for solving first and second order ordinary differential equations.	**PSO - 5**	**K3 & K5 (Ap & C)**

Teaching Plan

Total Contact Hours: 60 (Including Lectures, Assignment, Tests)

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment/ Evaluation
I	**FUNDAMENTALS OF ALGEBRAIC EQUATION**:					
	1.	Solution of algebraic and transcendental equations	2	K1	Introductory session, Lecture using videos, PPT	Short summary or overview, MCQ, True/False,
	2.	Bisection method	2	K2	Lecture using Chalk and talk	Concept explanations, Problem-solving question
	3.	Fixed point iteration method	2	K4	Lecture using Chalk and talk, Group Discussion, PPT	True/False, Problem-solving questions
	4.	Newton Raphson method	2	K4	Problem solving Method, Peer tutoring	Problem-solving questions, Finish a procedure in many steps
	5.	Linear system of equations	2	K3	Problem solving Method, Group Discussion	Concept explanations, Problem-solving questions
	6.	Gauss elimination method.	2	K4	Lecture using Chalk and talk, Problem solving	Problem-solving questions. True/False
II	**ITERATIVE, INTERPOLATION AND APPROXIMATION:**					
	1.	Gauss Jacobi and Gauss Seidel	2	K1	Lecture using Chalk and talk	Concept explanations, Finish a procedure in many steps
	2.	Interpolation with unequal intervals	3	K3	Lecture using videos	Evaluation through short test, Problem-solving questions
	3.	Lagrange’s	2	K3	Peer tutoring,	Suggest

		interpolation			Problem solving	formulae, Solve problems, MCQ, True/False
	4.	Newton's divided difference interpolation	2	K4	Problem solving Method, Demonstration, PPT	Suggest concept with examples, Suggest formulae, Solve problems, Explain
III	**INTERPOLATION WITH EQUAL INTERVAL:**					
	1.	Difference operators and relations	3	K1	Lecture using Chalk and talk	Concept explanation, Problem-solving questions
	2.	Interpolation with equal intervals	3	K2	Lecturing with illustration, Problem solving	Evaluation through short test, Seminar, Problem-solving questions
	3.	Newton's forward and backward difference formulae.	3	K3	Demonstration, PPT, Problem solving	Problem-solving questions, Finish a procedure in many steps
IV	**NUMERICAL DIFFERENTIATION AND INTEGRATION:**					
	1.	Approximation of derivatives using interpolation polynomials	2	K2	Lecture using Chalk and talk	Concept explanations, Finish a procedure in many steps.
	2.	Numerical integration using Trapezoidal	2	K3	Peer tutoring, Problem solving	Suggest formulae, Solve problems, Problem-solving questions

	3.	Simpson's 1/3 rule	2	K4	Group Discussion, Problem solving	Suggest formulae, Solve problems, MCQ, True/False
	4.	Simpson's 3/8 rule	2	K5	Group Discussion, Problem solving	Evaluation through short test, Seminar, Problem-solving questions
V	**INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL EQUATIONS:**					
	1.	Single step methods	2	K1	Lecture using Chalk and talk	Concept explanations
	2.	Taylor's series method	2	K3	Group Discussion, Problem solving	Problem-solving questions
	3.	Euler's method	2	K3	Problem solving Method, Peer tutoring	Problem-solving questions
	4.	Modified Euler's method	2	K4	Group Discussion, Lecture using Chalk and talk	Problem-solving questions
	5.	Runge Kutta method for solving (first, second, Third) order equations	3	K4	Problem solving, Demonstration, PPT,	Seminar, Problem-solving questions

Course Focussing on Skill Development

Activities (SD): Solving problems in Newton's Backward and Forward difference formulae, Seminar, class test, Group Discussion.

Assignment: Numerical integration using Trapezoidal

Sample questions

Part A

1. Choose the algebraic equation from the following _____.

   a) $x^2 + x + 1 = 0$ b) $3x + sin\ sin\ x + 2 = 0$

   c) $log\ log\ x + sin\ sin\ x + 2 = 0$ d) $2e^x + sin\ sin\ x + x^2 = 0$

2. Geometrical interpretation Newton Raphson method is also referred as _____.

   a) Method of False Position b) Bolzano method

   c) method of tangents

3. The $n^{th}\ divided$ difference of a polynomial of degree n are _____.

   a)1 b) 0 c) n d)2

4. If f(4) = 1, f(6) = 3 then the interpolating polynomial is _____.

   a) $3x - 1$ b) $x + 3$ c) $x - 3$ d) $3x - 2$

5. Newton's forward interpolation is used only for _____ intervals.

   a) equal b) unequal c) infinite d) none

Part B

6. Find a real root of the equation $x^3 + x^2 - 1 = 0$ in the interval [0,1] by the method of iteration

7. Solve the following equation by Gauss Seidel method

   $$2x + y = 3$$

   $$2x + 3y = 5$$

8. Find $\Delta(2^x)$

9. Given the values

10. x	11. 3	12. 7	13. 9	14. 10
15. y	16. 168	17. 120	18. 72	19. 63

   a. Evaluate y_6 using Langrange's formula.

10. Given $y' = x^2 - y,\ y(0) = 1\ find\ y = (0.1)$ using Runge-kutta method of fourth order.

Part C

11. Solve the following system of equation using Gauss Seidel iteration method.

    $$6x + 15y + 2z = 72; \quad x + y + 54z = 110; \quad 27x + 6y - z = 85$$

12. From the data given below, find the number of students whose weight is between 60 and 70.

Weight	0-40	40-60	60-80	80-100	100-120
Number of students	250	120	100	70	50

13. Given that $u_0 = 5$; $u_1 = 15$; $u_2 = 57$; and $\frac{du}{dx}$ =4 at x=0 and 72 at x=2. Find $\Delta^3 u_0$ and $\Delta^4 u_0$
14. Using Taylor's method solve $\frac{dy}{dx} + 2xy = 1, y_0 = 0$.
15. Using Euler's method solve $\frac{dy}{dx} = 1 + xy$ with $y(0.1) = 2$. Find $y(0)$, $y(0.2)$ and $y(0.3)$. Also find the values by modified Euler's method.

Head of the Department
J. Anto Hepzie Bai

Course Instructor
Dr. J. Nesa Golden Flower

Department : **Computer Science**

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

Title of the Course : **Non Major Elective NME I: Office Automation**

Semester : **I**

Course Code : **SU231NM1**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SU231SE1	1	1	-	2	2	30	25	75	100

Objectives:

1. To impart training for students in Microsoft Office which has different components like MS Word, MS Excel, MS Access and Power point.
2. To acquire knowledge on editor, spread sheet and presentation software.

Course Outcomes

CO	Upon completion of this course, the students will be able to:	PSO addressed	CL
CO - 1	remember the fundamentals and understand the concepts.	**PSO - 1**	**K1& K2 (R & U)**
CO - 2	understand the functionality and purpose of commands and apply the concepts.	**PSO - 2**	**K2&K3 (U & Ap)**
CO - 3	understand the purpose of functions, database and apply this to solve problems.	**PSO - 3**	**K2&K3 (U & Ap)**

Teaching plan

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

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment/ Evaluation
I	**Introductory Concepts**					
	1.	Memory unit, CPU, Input Devices: Keyboard, Mouse and Scanner	2	K2(U)	Lecture using Chalk and talk, Group Discussion, PPT, Review	Evaluation through short test, MCQ, True/False,
	2.	Output devices: Monitor, Printer	1	K1(R)	Lecture using Chalk	Simple definitions, Recall steps, Concept definitions
	3.	Introduction to Operating systems & its features: DOS,	2	K2(U)	Lecture using Chalk and talk, Demonstration, PPT	Quiz, Suggest idea/concept with

		UNIX, Windows				examples, Explain
	4.	Introduction to Programming Languages.	1	K3(Ap)	Lecture using Chalk and talk, Introductory session, Group Discussion, PPT	Problem-solving questions, Map knowledge
II	**Word Processing**					
	1	Open, Save and close word document; Editing text, tools, formatting,	2	K1(R)	Lecture using Chalk and talk, Group Discussion, PPT	Check knowledge in specific Discussion, Debating or Presentations
	2	Spell Checker, Document formatting, Paragraph alignment, indentation, headers and footers	2	K2(U)	Lecture using Chalk and talk, Group Discussion, Mind mapping, Lecture using videos, PPT Demonstration	Evaluation through short test, MCQ, True/False, Short essays, Concept explanations,
	3	numbering; printing, Preview, options, merge	2	K2(U)	Lecture using Chalk and talk, Group Discussion, PPT	Evaluation through short test, MCQ, Finish a procedure in many steps, Map knowledge
III	**Spreadsheets**					
	1	Excel: opening, entering text and data, formatting, navigating	2	K1(R)	Lecture using Chalk and talk, Group Discussion, Lecture using videos	Evaluation through short test, MCQ, True/False,
	2	Formulas, entering, handling and copying; Charts, creating, formatting and printing, analysis tables	2	K1(U)	Lecture using Chalk and talk, Group Discussion, PPT	Finish a procedure in many steps, Differentiate between various ideas, Map knowledge
	3	Preparation of financial	2	K3(Ap)	Lecture using Chalk and talk,	Problem-solving

		statements, introduction to data analytics.			Demonstration, PPT	questions,
IV	**Database Concepts**					
	1	The concept of data base management system; Data field, records, and files, Searching records	1	K1(R)	Lecture using Chalk and talk, Demonstration	Map knowledge
	2	Sorting and indexing data	1	K3(Ap)	Demonstration	Problem-solving questions
	3	Designing queries, and reports, Linking of data files	2	K2(U)	Demonstration	Quiz
	4	Understanding Programming environment in DBMS	1	K2(U)	Lecture using Chalk and talk	Recall
	5	Developing menu drive applications in query language (MS–Access).	1	K3(Ap)	Demonstration	Problem-solving questions
V	**PowerPoint**					
	1	Introduction to Powerpoint, Features	1	K1(R)	Lecture	Map knowledge
	2	Understanding slide typecasting & viewing slides creating slide shows	1	K3(Ap)	Demonstration	Problem-solving questions
	3	Applying special object including objects & pictures	2	K3(Ap)	Demonstration	Quiz
	4	Slide transition Animation effects	1	K3(Ap)	Demonstration	Practice Exercises

	5	Audio inclusion timers	1	K3(Ap)	Demonstration	Problem-solving questions

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

Activities (Em/ En/SD): Making students to create calendar in word, marksheet in Excel, Student's address database in Access.

Assignment: Output devices

Sample questions

Part - A

1. Which one of the following is an output device?
   a) Keyboard b) Mouse c) Printer d) None of the above
2. The Excel document has the file extension .doc (T/F).
3. ---------- appear at the bottom of the Excel window.
4. Which of the following store command to retrieve data from database?
   a) forms b) reports c) queries d) table
5. In PowerPoint, the header and footer button can be found on the insert tab in what group?
   a) Tables b) Text c) Object d) Illustrations

Part - B

6. Write short notes on Input and output devices.
7. Explain about Document Formatting.
8. What is the main function of Microsoft Excel?
9. What is the programming environment in a DBMS?
10. What are the different slide layouts available in Microsoft PowerPoint?

Part - C

11. Explain about Memory Unit.
12. Write about Formatting in word.
13. Discuss with Excel-Open, entering text and data, formatting.
14. How will you access a table in MS Access?
15. How will you apply special effects and audio in PowerPoint?

Head of the Department **Course Instructor**
Ms. J. Anto Hepzie Bai B.S. Saravana Bala

Department : **Computer Science**

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

Title of the Course : **Foundation Course: Problem Solving Techniques**

Semester : **I**

Course Code : **SU231FC1**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SU231FC1	1	1	-	2	2	30	25	75	100

Objectives:

1. To understand the importance of algorithms and programs, and to know of the basic problem solving strategies.
2. To learn efficient strategies and algorithms to solve standard problems, thus laying a firm foundation for designing algorithmic solutions to problems.

Course Outcomes

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO-1	know the approach and algorithms to solve specific fundamental problems.	PSO-1	K1(R)
CO-2	understand the systematic approach to problem solving.	PSO-4	K2(U)
CO-3	apply the efficient methods to solve specific problems related to text processing	PSO-3	K3(AP)

Teaching Plan

Total Contact hours: 30 (Including lectures, Assignments and Tests)

Unit	Module	Topics	Teaching hours	Cognitive level	Pedagogy	Assessment/ Evaluation
I	Introduction					
	1	Introduction, History, Characteristics and limitations of computer, Hardware/Anatomy of computer	2	K1(R)	Flipped classroom	PPT
	2	CPU, Memory, Secondary storage devices, Input devices and Output devices	1	K1(R)	KWL	Just a Minuet

	3	Type of computer, Software, Programming Languages	1	K1 (R)	Flipped classroom	PPT
	4	4GL and 5GL features of good programming language, Translators	1	K1(R)	PPT	Short summary
II	**Data**					
	1	Introduction, Data types, Input, Processing of data, Arithmetic operators, Hierarchy of operations and output	2	K2(U)	Lecture Method	Brain Storm
	2	Different Phases in Program Development Cycle (PDC), Structured Programming	1	K2(U)	Flipped classroom	PPT
	3	Features of good algorithm, Benefits and drawbacks of algorithm	1	K2(U)	KWL	Just a Minuet
	4	Flowcharts advantage and limitations of flowcharts, when to use flowcharts	1	K2(U) & K3(Ap)	Lecture Method	Brain Storm
	5	Pseudo code, coding, documenting and testing a program, Comment lines and types of errors, Program design, Modular programming	2	K2(U) & K3(Ap)	Demonstration	PPT and Quiz
	6	Comment lines and types of errors, Program design, Modular programming	1	K1(R) & K2(U)	Lecture Method	Short test, summary
III	**Selection Structures**					
	1	Relational and Logical operators, selecting from several alternatives	2	K3(Ap)	Demonstration	PPT
	2	Applications of selection structures	1	K3(Ap)	Case Study	Problem Solving
	3	Repetition Structures, counter controlled loops	2	K2(U) & K3(Ap)	Collaboration	Brainstorm
	4	Nested Loops, Applications of Repetition Structures	3	K3(Ap)	Demonstration	PPT
IV	**Data and Array**					
	1	Numeric data and Character based data	1	K2(U) & K3(Ap)	Lecture Method	Interactive PPT

	2	Arrays, One dimensional array, two-dimensional array	2	K2(U)	Demonstration	Problem Solving
	3	Strings as arrays of characters	1	K2(U) & K3(Ap)	Collaboration	Over view and quiz
V	**Data Flow Diagrams**					
	1	Definition, DFD symbols and types of DFDs	1	K2(U)	Demonstration	PPT
	2	Program Modules, Subprograms-Value and Reference parameters	2	K2(U) & K3(Ap)	Case Study	Problem Solving
	3	Scope of a variable, Functions, Recursion, Files	1	K2(U) & K3(Ap)	Collaboration	Brainstorm
	4	File Basics, Creating and reading a sequential file-Modifying Sequential Files.	2	K3(Ap)	Demonstration	PPT & Quiz

Course Focusing on Employ ability/Entrepreneurship/skill development: Skill development

Activities (Em/En/SD): Evaluation through short test and seminar

Assignment: CPU, Memory, Secondary storage devices, type of computer and Relational and Logical operators.

Seminar Topic: Numerical Data

Sample questions

PART A

1. Define Algorithm.
2. What are arithmetic operations? List out the arithmetic operator.
3. Name two secondary storage devices.
4. What is a flowchart?
5. Give an example of a simple if-else statement.

PART B

6. Write a short program that demonstrates the use of a counter-controlled loop to print numbers from 1 to 10.
7. Describe the structure and use of a one-dimensional array with an example.

8. Explain the importance of Data Flow Diagrams in system analysis and design.
9. When should flowcharts be used? Give examples.
10. What are the main differences between machine language and high-level language?

PART C

11. Elaborate on the differences between system software and application software with examples.
12. Discuss structured programming and its advantages over unstructured programming.
13. Provide a detailed explanation of relational and logical operators, including their types and usage in programming.
14. Write a detailed program that uses both one-dimensional and two-dimensional arrays to perform a matrix multiplication and explain each part of the code.
15. Discuss the advantages and disadvantages of modular program. Write the algorithm and flowchart.

Head of the Department
J. Anto Hepzie Bai

Course Instructor
Monisha.M

Department : Computer Science

Class : II B.Sc Computer Science

Title of the Course : Programming in Java

Semester : III

Course Code : SU233CC1

Course Code	L	T	P	S	Credits	Inst.Hours	Total Hours	Marks		
								CIA	External	Total
SU233CC1	3	1	1	-	5	5	75	25	75	100

Objectives:

1. To understand the basic object-oriented programming concepts and apply them in problem solving.
2. To demonstrate multitasking by using multiple threads and event handling.

Course Outcomes

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	demonstrate the implementation of inheritance (multilevel, hierarchical and multiple) by using extend and implement keywords	**PSO-1**	**K1&K2 (R & U)**
CO - 2	understand the process of graphical user interface design and implementation using AWT or swings	**PSO-2**	**K1&K4 (R & An)**
CO - 3	use multithreading concepts to develop inter process communication.	**PSO-3**	**K2&K3 (U & Ap)**
CO - 4	demonstrate the behaviour of programs involving the basic programming constructs like control structures, constructors, string handling and garbage collection.	**PSO-3**	**K2&K4 (U & An)**
CO - 5	develop applets that interact abundantly with the client environment and deploy on the server	**PSO-5**	**K6 (C)**

Teaching Plan

Total Contact hours: 75 (Including lectures, Assignments and Tests)

Unit	Module	Topics	Teaching hours	Cognitive level	Pedagogy	Assessment/ Evaluation
I	**Object Oriented Thinking and Java Basics**					
	1	Need for OOP Paradigm. Summary of OOP Concept. Java Buzzwords	3	K1(R)	Lecture Method	Evaluation through short test, MCQ, True/False, Concept explanations
	2	Data Types, Variables, Scope and Lifetime of variables. Type conversion and casting	3	K2(U)	Lecture Method	Simple definitions, MCQ, Recall steps, Concept definitions
	3	Arrays, operators and expressions, Control Statements, Simple Java Programs.	3	K3(A)	Lecture Method & Problem Solving	Quiz, Suggest idea/concept with examples,
	4	Concepts of classes and objects constructors, methods, this keyword	3	K2(U)	Lecture Method	Problem-solving questions, Differentiate between various ideas, Map knowledge
	5	Overloading Methods and Constructors, Parameter Passing, Recursion	3	K2(U) &K4(A)	Lecture Method & Problem Solving	Evaluation through short test, MCQ, True/False, Concept explanations.
II	**Inheritance, Packages and Interfaces**					
	1	Benefits of Inheritance, Member Access, Types of inheritance	2	K1(R)	Lecture Method & Context Based	Check knowledge in specific Discussion, Debating or Presentations
	2	Method Overriding, Using Super keyword, Using final with inheritance, Using abstract class	3	K2(U)	Lecture Method &	Evaluation through short test, MCQ, True/False, Short essays, Concept explanations,
	3	Packages: Defining, creating and accessing package,	5	K2(U)	Lecture Method	Problem-solving questions, Differentiate

		Understanding class path, Importing packages, Access protection				between various ideas, Map knowledge
	4	Interfaces: Differences between classes and interfaces, Defining an interface, Implementing interface, Applying interface, Variable in interface and Extending interface	5	K2(U)	Lecture Method	Simple definitions, MCQ, Recall steps, Concept definitions
III	**Exception Handling, Multi-Threading and String Handling**					
	1	Concepts of Exception Handling, Benefits of Exception Handling, Exception hierarchy	2	K2(U)	Lecture Method	Discussion and Questioning
	2	Usage of try, catch, throw, throws and finally, built-in exceptions, Creating own exceptions subclasses	4	K2(U) &K3(A)	Collaboration Interactive PPT	Problem-solving questions, Differentiate between various ideas, Map knowledge
	3	Multi-Threading: Differences between Multi-Threading and Multi-Tasking, Thread life cycle	3	K2(U)	Lecture Method	Problem-solving questions, Differentiate between various ideas, Map knowledge
	4	Creating threads, thread priorities, synchronizing threads, Inter thread communication, string handling	6	K2(U) &K3(A)	Lecture Method	Problem-solving questions, Differentiate between various ideas, Map knowledge
IV	**Event Handling and AWT**					
	1	Events, Event sources, event classes	3	K2(U)	Lecture Method	Problem-solving questions, Differentiate between various ideas, Map knowledge
	2	Event listeners, Delegation Event Model, Handling mouse and keyboard events, adapter classes	3	K2(U) &K4(A)	Lecture Method	Problem-solving questions, Differentiate between various ideas

	3	AWT: AWT classes, Working with frames windows	3	K2(U) &K4(A)	Lecture Method	Discussing and Questioning
	4	AWT Controls, Working with Graphics	4	K2(U) &K4(A)	Inquiry based Approach	Oral Presentation
	5	Layout manager, layout manager types	2	K2(U)	Lecture Method	PPT
V	**I/O and Applets**					
	1	I/O Basics, Reading console inputs, Writing console outputs	2	K2(U)	Lecture Method	Problem-solving questions,
	2	Scanner class, Printwriter class	3	K2(U) &K4(A)	Lecture Method	valuation through short test, MCQ, True/False, Short essays, Concept explanations,
	3	Applets: Two types of applets, Applets architecture, Difference between Applets and Applications	4	K2(U)	Lecture Method	Assignments
	4	An Applets Skeleton, Simple Applets display method	4	K2(U)	Lecture Method	Group Discussion
	5	Creating Applets, Passing Parameters to Applets	2	K2(U) &K4(A)	Lecture Method	Problem-solving questions,

Course Focusing on Employ ability/Entrepreneurship/skill development: Skill Development

Activities (Em/En/SD): Write a java program to create a button using AWT

Assignment: Exception Handling

Seminar Topic: AWT Classes

Sample questions

Part - A

1. Which of the following is not a principle of OOP?

   A) Encapsulation B) Abstraction C) Delegation D) Inheritance

2. Java is known for its _____ nature, allowing programs to run on any device with a Java Virtual Machine (JVM).

   A) Simple B) Platform-independent C) Object-oriented D) Robust

3. Which of the following is not a primitive data type in Java?

   A) int B) float C) string D) Boolean

4. What is the purpose of a constructor in Java?

   A) To create new objects B) To initialize the state of an object

   C) To destroy objects D) Both A and B

5. What does the 'this' keyword refer to in Java?

   A) Current class object B) Current method object

   C) Current package object D) Current variable object

Part - B

6. Explain the difference between widening and narrowing conversions in Java type casting.
7. Give an example of a simple Java program that uses a for-loop to iterate through an array and print each element.
8. How does recursion work in Java? Provide an example
9. What is the difference between single inheritance and multiple inheritance?
10. When would you use the super keyword in Java? Provide an example.

Part - C

11. What are the basic principles of object-oriented programming (OOP) in Java?
12. Explain multithreading in Java. Provide examples.
13. Discuss the concept of exception handling in Java. Explain how try-catch blocks are used to handle exceptions effectively, with examples.
14. Write a Java Program to create thread using Thread class
15. Write a java program to illustrate Mouse Event Handling.

Head of the Department
Ms. J. Anto Hepzie Bai

Course Instructor
B.S.Saravana Bala

Department : **Computer Science**

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

Title of the Course : **Elective Course III: Web Technology**

Semester : **III**

Course Code : **SU233EC1**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SU233EC1	3	1	-	3	4	60	25	75	100

Objectives:

1. To understand server-side technologies like databases and server frameworks.
2. To mastering HTML, CSS and JavaScript for webpage creation.

Course Outcomes

CO	Upon completion of this course, the students will be able to:	PSO addressed	Cognitive level
CO - 1	recall html tags, css properties, and javascript syntax	**PSO - 1**	**K1(R)**
CO - 2	explain the relationship between html, css and javascript in web development.	**PSO - 2**	**K2 (U)**
CO - 3	create well-structured web pages using html and css	**PSO - 3**	**K3 (AP)**
CO - 4	analyse and evaluate different frameworks and libraries for specific project requirements	**PSO - 2**	**K4 & K5 (AN & E)**
CO - 5	design and implement responsive web layouts that adopt to various screen sizes and devices	**PSO - 3**	**K6 (C)**

Teaching plan

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

Unit	Module	Topic	Teaching hours	Cognitive Level	Pedagogy	Assessment/ Evaluation
I	**Introduction to Web Technologies, Introducing HTML Document Structure, and Working with Links**					
	1.	History of the Web, Understanding Web System Architecture, Understanding 3 -	2	K1(R), K2(U)	Lecture with PPT	Simple definitions, Questioning

		Tier Web Architecture				
	2.	Web Browsers, Overview of HTTP, Exploring Web Technologies	3	K1(R), K2(U)	Lecture with PPT	Short summary, Quiz
	3.	The <!DOCTYPE> Element, The <html> Element, The <title> Element, The <body> Element	2	K3(Ap)	Lecture cum Demonstration	Discussions, Questioning
	4.	Creating Headings on a Web Page, Creating a Hyperlink	2	K3(Ap)	Lecture using videos	Simple definitions and Questioning
	5.	Setting the Hyperlink Colors, Linking Different Sections of a Web Page.	3	K3(Ap)	Lecture using videos	Slip Test
II	**Working with Images, Working with Table, and Working with Frames**					
	1.	Inserting an Image on a Web page, Displaying Alternate text for an Image, Adding a Border to an Image, Aligning an Image	1	K3(Ap)	Lecture with PPT	Asking students to write programs
	2.	Creating Images as Links, Creating Image Maps	3	K3(Ap)	You tube Videos	Questioning
	2.	Creating a Table, Specifying a Caption to a Table, Adding a Table Heading, Setting the Table Border, Aligning a Table and Cell Content, Setting the Width of a Table and Table Columns, Setting Cell Padding and Cell Spacing	2	K6(C)	Lecture cum demonstration	Quiz in Slido
	3.	Spanning Rows and Columns, Nesting Tables	2	K3(Ap), K6(C)	Flipped classroom	Evaluation through short test

	4.	Creating a Frame, Creating Vertical and Horizontal Frames	2	K4(An), K6(C)	Lecture with PPT	Suggest idea with examples
	5	Setting the Frame Border Thickness, Applying Hyperlink targets to a Frame.	2	K2(U) K3(Ap)	Lecture with PPT	Concept Explanations
III	**Introduction to Forms and HTML Controls and Introducing Cascading Style Sheets**					
	1.	Creating an HTML Form	2	K3(Ap)	Lecture with Demonstration	Short test
	2.	Specifying the Action URL and Methods to Send the Form	2	K2(U)	Lecture, Group Discussion	Discussions, Questioning
	3.	Using the HTML Controls	3	K3(Ap)	Lecture with PPT	Discussions
	4.	Inline Style, External Style Sheets	2	K2(U), K4(An)	Blended Learning	Explaining concepts
	5.	Internal Style Sheets	1	K2(U)	Inquiry based Approach	Quiz in Nearpod,
	6.	Style Classes, Multiple Styles	2	K2(U)	Lecture with PPT	Simple Definitions
IV	**Introducing JavaScript**					
	1.	Handling Events, Using Variables in JavaScript	3	K3(Ap)	Brainstorming	Concept explanations
	2.	Using Array in JavaScript, Creating Objects in JavaScript	2	K2(U)	Group Discussion	Discussions, Questioning
	3.	Using Operators	2	K4(An)	Inquiry based Approach	Seminar
	4.	Working with Control Flow Statements	3	K1 (R), K2(U)	Inquiry based Approach	Quiz
	5.	Working with Functions	2	K3(Ap)	Lecture cum demonstration	Recall steps
V	**JavaScript Objects**					
	1.	Window Object, Document object, Browser Object	3	K2(U)	Lecture with PPT	Short test
	2.	Form Object, Navigator object, Screen object	3	K2(U)	Lecture with PPT	Questioning

	3.	Events, Event Handlers	3	K3(Ap)	Lecture with demonstration	Quiz in google classroom
	4.	Forms Validations	3	K3(Ap)	Lecture cum demonstration	Slip test

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Entrepreneurship

Activities (Em/ En/SD): Creating Web Pages and Websites

Assignment: Analyze JavaScript Objects and uploading in Google Classroom

Seminar Topic: Operators, Variables in JavaScript

Sample questions:

Part A

1. To add a heading to a table, you use the <____> tag.
2. The MIME type of a QuickTime Movie is ----------.
   a) video/x-mov b) video/x–movie c) video/s – movie d) video/s-mov
3. Which HTML tag is used to link an external style sheet to an HTML document?
   a) <script> b) <style> c) <link> d) <css>
4. The Browser object is a standard JavaScript object used to access the browser's history, cookies, and settings. Say “True” or “False”
5. Which attribute of the <link> tag specifies the location of the external style sheet?

Part B

6. How do you create a hyperlink in HTML?
7. Discuss about working with tables.
8. Analyze inline style and Internal style sheet.
9. Describe the various operators in JavaScript.
10. Write a short note on browser object in JavaScript.

Part C

11. Analyze the HTML document structure with an example.
12. Illustrate image maps with a suitable example.
13. Elucidate HTML form with a suitable example
14. Discuss the looping statements with suitable examples in JavaScript
15. Discuss form validation 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 : **Skill Enhancement Course SEC-II: Programming in PHP**

Semester : **III**

Course Code : **SU233SE1**

Course Code	L	T	P	S	Credits	Inst. Hours	Total Hours	Marks		
								CIA	External	Total
SU233SE1	1	-	1	-	2	2	30	25	75	100

Objectives:

1. To design and develop dynamic, database-driven web applications using PHP version.
2. To get an experience on various web application development techniques.

Course Outcomes

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO-1	recall and apply PHP syntax to solve programming problems.	PSO-1	K1(R), K3(AP)
CO-2	interpret and analyze PHP code and explain its behaviour.	PSO-1	K2(U), K4(AN)
CO-3	apply php scripts to perform specific tasks, such as form processing or database manipulation.	PSO-2	K3(AP)
CO-4	manipulate files, sessions and cookies deploy	PSO-4	K3(AP)
CO-5	create PHP programs that use various PHP library functions	PSO-3	K6(C)

Teaching plan

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

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment / Evaluation
I	**Introduction to PHP**					
	1	Introduction to PHP, Basic Knowledge of Websites	2	K2(U) & K4(An)	Collaboration	Interactive PPT
	2	Introduction of Dynamic Website, Introduction to PHP	2	K2(U) & K4(An)	Collaboration	Interactive PPT

	3	Scope of PHP, XAMPP and WAMP Installation	**2**	K2(U) & K3(Ap)	Demonstration	PPT and Quiz
II	**PHP Programming Basics**					
	1	PHP Programming Basics, Syntax of PHP, Embedding PHP in HTML	**2**	K1(R) & K4(An)	Flipped classroom	PPT
	2	Introduction to PHP Variable, Understanding Data Types, Using Operators	**2**	K2(U) & K3(Ap)	Collaboration	Interactive PPT
	3	Using Conditional Statements, if (), else if () and else if condition Statement	**2**	K1(R), K6(C) & K4(An)	Reflective Thinking	PPT
III	**Switch () Statements**					
	1	Switch () Statements, Using the while () Loop, Switch () Statements -Using the while () Loop	**2**	K2(U), K3(Ap) & K6(C)	Flipped classroom	PPT
	2	PHP Functions, Creating an Array, Modifying Array Elements, Processing Arrays with Loops	**2**	K2(U) & K3(Ap)	KWL	Just a Minuet
	3	Grouping Form Selections with Arrays, Using Array Functions.	**2**	K2(U) & K3(Ap)	Demonstration	PPT and Quiz
IV	**PHP Advanced**					
	1	Introduction, PHP Advanced Concepts	**2**	K2(U) & K3(Ap)	KWL	Just a Minuet
	2	Reading and Writing Files	**2**	K2(U) & K6(C)	Lecture Method	Brain Storm
	3	Reading Data from a File	**2**	K2(U) & K6(C)	Lecture Method	Brain Storm
V	**Managing Sessions**					
	1	Managing Sessions and Using Session Variables	**2**	K2(U), K3(Ap) & K6(C)	Flipped classroom	PPT
	2	Destroying a Session	**2**	K2(U) & K3(Ap)	KWL	Just a Minuet
	3	Storing Data in Cookies, Setting Cookies	**2**	K2(U) & K3(Ap)	Demonstration	PPT and Quiz

Course Focusing on Employability/Entrepreneurship/skill development: Skill development

Activities (Em/En/SD): Evaluation through short test and seminar

Assignment: CPU, Memory, Secondary storage devices, type of computer and Relational and Logical operators.

Seminar Topic: Array

Sample Questions

PART A

1. In PHP, the variable name starts with:

a. # (Hash) b. & (Ampersand) c. $ (Dollar) d. ! (Exclamation)

2. Which of these is the correct way in which we can add a comment in PHP?

a. // …… b. /* …… */ c. & …… & d. Both (a) and (b)

3. In PHP, which of these is the correct way in which we can define a variable?

a. $variable name as value; b. $variable_name = value

c. $variable_name = value; d. $variable name = value;

4. In PHP, which of these functions is used to get any ASCII value of the given character?

a. chr() b. ascii() c. asc() d. val()

5. The output of the program mentioned below would be:

```
<?php
$a = array(16, 5, 2);
echo array_product($a);
?>
```

a. 32 b. 80 c. 1652 d. 160

PART B

6. Discuss where PHP is used and its importance in building dynamic websites.
7. What are the different data types available in PHP? Provide examples.
8. Describe the use of if, else if, and else statements with an example.
9. Write a PHP script that demonstrates the use of a while loop.
10. Explain file handling functions in PHP and provide a code example that reads data from a file.

PART C

11. Provide a detailed explanation of the steps involved in installing XAMPP and WAMP, including configuration and starting the server.
12. Explain how PHP processes form data, stores it in arrays, and provides an example of grouping form selections using arrays.

13. How does PHP handle error and exception handling? Illustrate with examples.
14. Detail the different types of loops available in PHP and their use cases. Provide code examples for each type of loop.
15. Describe the syntax and use cases of switch statements and provide a code example demonstrating their use.

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 VI: Web Technology: Theory and Practice**

Semester : **V**

Course Code : **SC2151**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SC2151	4	-	-	4	4	60	30	70	100

Objectives

1. To study the various HTML tags and design simple web pages
2. To study the scripting language Java Script.

Course Outcomes

CO	Upon completion of this course, the students will be able to:	PSO addressed	Cognitive level
CO - 1	create dynamic web pages using XHTML, cascading style sheets and JavaScript.	**PSO - 1**	**K6(C)**
CO - 2	analyze a web page and identify its elements and attributes.	**PSO - 1**	**K4(An)**
CO - 3	define the fundamental ideas and standards underlying web service technology	**PSO - 1**	**K2 (U)** **K1(R)**
CO - 4	apply the knowledge of the internet and related internet concepts that are vital in understanding web application development and analyze the insights of internet programming to implement complete application over the web.	**PSO - 3**	**K3 & K4(Ap & An)**

Teaching plan

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

Unit	Module	Topic	Teaching hours	Cognitive Level	Pedagogy	Assessment/ Evaluation
I	**Structuring Documents for the Web, Links & Navigation, Images, Audio, and Video**					
	1.	Introducing HTML and XHTML, Basic Text Formatting, Presentational Elements	3	K2(U), K4(An)	Lecture with PPT	Simple definitions, Questioning
	2.	Phrase Elements, Lists, Core Elements and Attributes	3	K3(Ap), K2(U)	Brainstorming	Asking students to write programs
	3.	Basic Links, Creating Links with the <a> Element	2	K3(Ap)	Lecture with illustrations, PPT	Discussions
	4.	Adding Images Using the <img> Element	2	K3(Ap)	Lecture using videos	Questioning
	5.	Using Images as Links	2	K3(Ap)	Lecture using videos	Slip Test
II	**Images, Audio, and Video, Tables, Forms**					
	1.	Adding Flash, Video and Audio to your web pages: Adding videos to your Site, Adding Audio to your Site	3	K3(Ap)	Lecture with videos	Short test
	2.	Introducing Tables, Basic Table Elements and Attributes	2	K6(C)	Lecture with Illustrations	Quiz in Slido
	3.	Adding a <caption> to a Table, Grouping Section of a Table, Nested Tables	2	K3(Ap), K6(C)	Group Discussion	Evaluation through short test
	4.	Introducing Forms, Form Controls	3	K4(An), K6(C)	Inquiry based Approach	Questioning
	5	Sending Form Data to the Server	2	K2(U)	Lecture with PPT	Concept Explanations
III	**Frames, Cascading Style Sheets**					
	1.	Introducing Frameset, The	2	K3(Ap)	Lecture with Demonstration,	Short test

		<frameset> Element				
	2.	The <frame> Element, Creating Links Between Frames	2	K3(Ap)	Group Discussion	Questioning
	3.	Nested Framesets	2	K6(C)	You tube videos	Discussions
	4.	Introducing CSS, Where you can Add CSS Rules, CSS Properties	3	K2(U), K3(Ap)	Lecture cum demonstration	Slip test
	5.	Controlling Text, Text Formatting	2	K2(U)	Lecture with PPT	Quiz, MCQ
	6.	Text Pseudo Classes	1	K2(U)	Lecture with PPT	Simple Definitions
IV	**Java Script, Working with JavaScript**					
	1.	How to Add Script to Your Pages	1	K3(Ap)	Lecture with PPT	Ask to write programs
	2.	Variables, Operators	3	K2(U)	Inquiry based Approach	Questioning
	3.	Control Structures, Conditional Statements	3	K4(An)	Flipped Classroom	Seminar
	4.	Looping, Functions, Built in Functions	3	K4(An)	Flipped Classroom	Quiz
	5.	Practical Tips for Writing Scripts	2	K6(C)	Lecture with PPT	Recall steps
V	**JavaScript Objects**					
	1.	Window Object, Document object, Browser Object	3	K2(U)	Lecture with PPT	Slip test
	2.	Form Object, Navigator object, Screen object	3	K2(U)	Lecture with PPT	Discussion
	3.	Events, Event Handlers	3	K3(Ap)	Lecture with demonstration	Short summary
	4.	Forms Validations	3	K3(Ap)	Lecture with demonstration	Concept Explanations

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Entrepreneurship

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

Assignment: Versions of HTML, Difference between HTML & XHTML and uploading in Google Classroom

Seminar Topic: Navigator Object, Screen Object

Sample questions:

Part A

1. Which HTML element is used to represent inline quotations?

   a) `<q>` b) `<blockquote>` c) `<cite>` d) `<abbr>`

2. The ---------- attribute is used to apply CSS styles to an element.
3. Operators perform functions on variables. Say “True” or “False”
4. Which HTML element is used to define a frameset?

   a) `<frame>` b) `<iframe>` c) `<frameset>` d) `<setframe>`

5. Which method is used to open a new browser window?

Part B

6. How do you create a link using images?
7. How do you send form data to the server?
8. How do you create links between frames?
9. How do you add a script to your pages?
10. Write a short note on document object in JavaScript

Part C

11. Elaborate phrase elements with suitable example.
12. Discuss about adding videos to your website.
13. Describe about controlling text with suitable example.
14. Discuss the looping statements with suitable examples in JavaScript
15. Discuss form validation with suitable examples.

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 : **Major Core VII: Relational Database Management Systems**

Semester : **V**

Course Code : **SC2152**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SC2152	4	-	-	4	4	60	30	70	100

Objectives:

1. To describe a sound introduction to the discipline of database management system.
2. To give a good formal foundation on the relational model of data and study the SQL in detail.

Course Outcomes

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO - 1	describe basic concepts of data base system and architecture	**PS0-1**	**K1(R)**
CO - 2	define the logical design of database including E-R model and normalization approach	**PSO-1**	**K2(U)**
CO - 3	understand and apply the basic of SQL and authorization methods	**PSO-3**	**K2(U)**
CO - 4	analyze normal forms and RDBMS methods	**PSO-3**	**K4(An)**
CO - 5	apply timestamp and transaction management	**PSO-4**	**K3(AP)**

Teaching Plan

Total Contact hours: 60 (Including lectures, Assignments and Tests)

Unit	Module	Topics	Teaching hours	Cognitive level	Pedagogy	Assessment/ Evaluation
I	**Introduction**					
	1	Introduction, database system application	2	K1(R)	Lecture	Simple definitions, Questioning
	2	DBMS Vs. File system, View of data	3	K1(R)	Lecture Method	PPT

	3	Model Database Languages, database users and administrators	3	K1(R)	Lecture	Discussions, Questioning
	4	Transaction Management, Database system structure	2	K2(U)	Demonstration	PPT and Quiz
	5	Application Architecture, Data models: Basic concepts	3	K2(U)	Collaboration	Interactive PPT
	6	Constraints, keys, ER diagram, Week Entity	3	K2(U)	Lecture Method	PPT
	7	Extended ER features, UML, Relational model	4	K2(U)	Lecture Method	PPT
II	**SQL**					
	1	SQL Introduction, background, basic structure	2	K2(U)	Collaboration	Interactive PPT
	2	Set operation, aggregate function, null values	3	K2(U)	Lecture Method	Problem Solving Method
	3	Nested Sub Queries, views, Modification of the database	4	K2(U)	Lecture Method	Discussions, Questioning
	4	Data definition language, embed SQL, Dynamic SQL	4	K2(U)	Lecture Method	Recall the program SQL
III	**Advance SQL**					
	1	Advance SQL, Integrity and Security	2	K2(U)	Demonstration	PPT and Quiz
	2	Domain, constraints, Referential integrity	4	K2(U)	Lecture Method	Short summary
	3	Assertions, Triggers, security and Authorization	4	K2(U)	Lecture Method	Discussions, Questioning
	4	Encryption and Authentication	2	K2(U)	Lecture Method	Recall

IV	**Relational Database Design**					
	1	Introduction, FNF, Pitfalls in relation database design	4	K4(AN)	Reflective Thinking	PPT
	2	Functional Dependencies	1	K4(AN)	Demonstration	Brain Storm
	3	Boyee-Codd Normal Form, Third Normal Form	3	K4(AN)	Collaboration	Interactive PPT
	4	Fourth Normal Form, Overall database design process	3	K4(AN)	Collaboration	Interactive PPT And Quiz
V	**Transaction Management**					
	1	Introduction, Transaction concepts	1	K3(AP)	Lecture Method	Seminar
	2	States, Serializability	2	K3(AP)	Lecture Method	MCQ
	3	Lock based concurrency control, Locks	2	K3(AP)	Simulation	Brain Storm
	4	Granting, Timestamps, Timestamp ordering protocol	3	K3(AP)	Reflective Thinking	Creative
	5	Dead lock handling	1	K3(AP)	Lecture	Concept Explanations

Course Focusing on Employ ability/Entrepreneurship/skill development: Skill Development

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

Assignment: ER Model, SQL and Relational Database Design, Normal forms

Seminar Topic: Dead lock handling

Sample questions

PART A

1. A Data Manipulation Language (DML) is a language that enables users to access or manipulate data. State True or False.

2. What is a relation in RDBMS?
   a) Key b) Table c) Row d) Data Types

3. A sub-query is a _____ expression that is nested with in another query.

4. The _____ authorization on a relation is required to read tuples in the relation.
   a) Drop b) Add c) Select d) Delete

5. State true or false: We cannot write a where clause under an update command.

PART B

6. Mention the Widely used database system application.

7. Summarize the built in aggregate function supported by SQL.

8. How to construct the trigger to maintain referential integrity?

9. Illustrate the concept of BCNF and Dependency Preservation.

10. Determine the Two-Phase Locking Protocol.

PART C

11. Describe the database architecture with neat diagram.

12. Construct the basic structure of SQL Queries.

13. Determine how to assign the several form of authorization to database in SQL.

14. Explain the concept of TNF with an example.

15. Explain the Deadlock Detection.

Head of the Department
J. Anto Hepzie Bai

Course Instructor
Monisha.M

Department : **Computer Science**

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

Title of the Course : **Major Core VIII: Mobile Computing and its Applications**

Semester : **V**

Course Code : **SC2153**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SC2153	3	1	-	4	4	60	30	70	100

Objectives:

1. To understand mobile computer systems particularly in the context of wireless network systems.
2. To emphasize how to interface hardware to mobile computing devices.

Course Outcomes

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO -1	understand the basic concepts and principles in mobile computing.	**PSO – 1**	**K2(U)**
CO -2	describe the concepts of FDMA, TDMA, packet delivery and handover management.	**PSO - 1**	**K2(U)**
CO -3	acquire and apply the knowledge of conventional TCP/IP protocols.	**PSO – 4**	**K2(U), K3(AP)**
CO -4	classify the various data delivery mechanisms and data synchronization.	**PSO – 2**	**K4(AN)**
CO -5	understand and apply various routing algorithms for mobile applications	**PSO – 4**	**K2(U), K3(AP)**

Teaching Plan

Total Contact hours: 60 (Including lectures, Assignments and Tests)

Unit	Module	Topics	Teaching hours	Cognitive level	Pedagogy	Assessment/ Evaluation
I	**Introduction to Mobile Communications**					
	1	Introduction to Mobile Communications, Mobile Computing	2	K1(R)	Lecture	Simple definitions, Questioning

	2	Paradigm, Promises/Novel Applications and Impediments and Architecture	3	K1(R)	Lecture Method	PPT
	3	Mobile and Handheld Devices, Limitations of Mobile and Handheld Devices	3	K1(R)	Lecture	Discussions, Questioning
	4	GSM, Services, System Architecture	2	K2(U)	Demonstration	PPT and Quiz
	5	Radio Interfaces, Protocols, Localization, Calling	3	K2(U)	Collaboration	Interactive PPT
	6	Handover, Security, New Data Services, GPRS.	3	K2(U)	Lecture Method	PPT
II	**Motivation for a specialized MAC**					
	1	Motivation for a specialized MAC (Hidden and exposed terminals, Near and far terminals)	2	K2(U)	Collaboration	Interactive PPT
	2	SDMA, FDMA, TDMA, CDMA, Wireless LAN/(IEEE 802.11)	3	K2(U)	Lecture Method	Problem Solving Method
	3	Mobile Network Layer IP and Mobile IP Network Layers	4	K2(U)	Lecture Method	Discussions, Questioning
	4	Packet Delivery and Handover Management, Location Management, Tunneling and Encapsulation, Route Optimization, DHCP.	4	K2(U)	Lecture Method	Recall the program SQL

III	1	Conventional TCP/IP Protocols	2	K2(U)	Lecture Method	Discussion and Questioning
	2	Indirect TCP, Snooping TCP, Mobile TCP	2	K2(U)	Collaboration	Interactive PPT
	3	Other Transport Layer Protocols for Mobile Networks	2	K2(U)	Lecture Method	PPT and Quiz
	4	Database Issues: Database Hoarding and Caching Techniques	3	K2(U)	Lecture Method	PPT and Quiz
	4	Query processing, Data Recovery process & QoS Issues	3	K2(U)	Lecture Meethod	Discussing and Questioning
IV	1	Communication Asymmetry, Classification of Data Delivery Mechanisms	4	K2(U)	Lecture Method	Discussing
	2	Data Dissemination Broadcast Models	3	K2(U)	Lecture Method	Interactice PPT
	3	Selective Tuning and Indexing Methods	4	K2(U)	Lecture Method	Discussing and Qusetioning
	4	Data Synchronization	4	K2(U)	Inquiry based Approach	Oral Presentation
V	1	Introduction, Application & Challenges of a MANET	3	K2(U)	Lecture Method	PPT
	2	Routing, Classification of Routing Algorithms such as DSR, AODV	4	K2(U)	Lecture Method	PPT
	3	Mobile Agents.	3	K2(U)	Lecture Method	Assignments
	4	Protocols and platform for mobile computing: WAP, Bluetooth, Android, Security	4	K2(U)	Lecture Method	Group Discussion

Course Focusing on Employ ability/Entrepreneurship/skill development: Skill Development Activities (Em/En/SD): Creating Models

Assignment: Motivation for a specialized MAC

Seminar Topic: Mobile Network Layer IP and Mobile IP Network Layers

Sample questions

PART A

1. In which one of the following codes with specific characteristics can be applied to the transmission?

a. CDMA b. GPRS c. GSM d. All

2. In the Cellular Network, on which of the following, the cell's shape depends

a) Political conditions. b. Social Conditions c. Environment Condition d. None

3. Route optimization aims to _____ the most efficient path between a source and destination.

4. Data recovery software utilizes algorithms to _____ lost or corrupted files from storage media.

5. State two advantages using Bluetooth in mobile computing.

PART B

6. Explain the concept of mobile computing and its significance in today's world.
7. Describe the system architecture of GSM.
8. Discuss the challenges and techniques involved in query processing in mobile computing environments.
9. Compare and contrast the advantages and limitations of the one-to-many and many-to-many broadcast models in mobile computing
10. Explain the architecture of WAP and discuss its key components. How does WAP enable mobile devices to access internet content efficiently?

PART C

11. Explain the various GSM services and their importance in mobile communication.
12. Describe the GSM system architecture in detail, focusing on the radio interface, protocols, and security mechanisms.
13. Explain TCP handshaking in mobile networks.
14. Provide a through description of each type of data delivery mechanism, including how data is transmitted, and its advantages and disadvantages.
15. Write a shot notes on different routing algorithms

Head of the Department
Ms. J. Anto Hepzie Bai

Course Instructor
Monisha
B.S.Saravana Bala

Department : **Computer Science**

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

Title of the Course : **Major Elective II: Multimedia Systems**

Semester : **V**

Course Code : **SC2154**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SC2154	1	3	-	3	4	60	30	70	100

Objectives

1. To understand the standards available for different audio, video and text applications
2. To learn various multimedia authoring systems in multimedia production team

Course Outcomes

CO	Upon completion of this course the students will be able to:	PSO addressed	CL
CO-1	convey multimedia and design fonts used in texts	PSO-3	K6(C)
CO-2	create image and produce audio inserted multimedia project	PSO-1	K4(AP)
CO-3	make animations and video clips	PSO-3	K4(Ap)
CO-4	understand the requirements for multimedia preparation	PSO-1	K2(U)
CO-5	analyze the process of planning, preparing and owning the multimedia	PSO-4	K3(An)

Teaching Plan

Total Contact hours: 60 (Including lectures, Assignments and Tests)

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment/ Evaluation
I	**Multimedia and Text**					
	1.	Multimedia Definitions, use of multimedia, Delivering multimedia	4	K1(R) &K2(U)	Lecture Method using PPT	Evaluation through short test, MCQ, True/False, Concept explanations,
	2.	Text: About Fonts and	4	K1(R) &K2(U)	Lecture Method with	Simple definitions,

		Faces. Using text in Multimedia			PPT	MCQ, Recall steps, Concept definitions
	3.	Computers and Text, Font editing and Text Tools, Hypermeida and hyprertext	4	K2(U) &K3(A)	Lecture using Chalk and talk, Demonstration, PPT	Quiz, Suggest idea/concept with examples, Explain
II	**Images and Sound**					
	1	Images: Plan Approach, Oraganise Tools, Configure Computer Workspace	4	K1(R) &K2(U)	Lecture using Chalk and talk, Group Discussion, PPT	Check knowledge in specific Discussion, Debating or Presentations
	2	Making Still images, Colour, Image file Formats	4	K2(U) &K3(A)	Lecture using Chalk and talk, Introductory session, Group Discussion, Mind mapping, Peer tutoring, Lecture using videos, Demonstration, PPT, Review	Evaluation through short test, MCQ, True/False, Short essays, Concept explanations,
	3	Sound: The power of sound, Midi Audio, Multimedia System Sound. Audio File Formats. Adding sound to multimedia Project	4	K2(U) &K3(A)	Lecture using Chalk and talk, Group Discussion, PPT	Evaluation through short test, MCQ, Finish a procedure in many steps, Map knowledge
III	**Animation and Video**					
	1	Animation: The Power of motion. Principles	4	K1(R)	Lecture using Chalk and talk, Group Discussion,	Evaluation through short test, MCQ,

		of animation.			Lecture using videos, Demonstration, PPT	True/False, Concept explanations, Short summary or overview
	2	Animation by computer, Making animations that work	4	K1(R)	Chalk and talk, Lecture using Group Discussion, PPT	Evaluation through short test, MCQ, True/False, Concept explanations, Short summary or overview
	3	Video: Using Video, Working with Video and space. Obtaining Video Clips	4	K1(U)	Chalk and talk, Lecture using Group Discussion, PPT	Finish a procedure in many steps, Differentiate between various ideas, Map knowledge
IV	**Making Multimedia**					
	1	The stage of multimedia Project. The intangible needs	4	K1(R)	Lecture using Chalk and talk, Demonstration	Map knowledge
	2	The hardware needs. The software needs	4	K3(Ap)	Demonstration	Problem-solving questions
	3	Multimedia production team	4	K2(U)	Demonstration	Quiz
V	**Planning and Costing**					
	1	The process of making multimedia, Scheduling, Estimating, RFPs and Bid proposals	4	K1(R)	Lecture	Map knowledge

	2	Designing and producing: Designing	4	K3(Ap)	Demonstration	Problem-solving questions
	3	Content and Talent: Acquiring content, acquiring Talent	4	K3(Ap)	Demonstration	Quiz

Course Focusing on Employ ability/Entrepreneurship/skill development: Skill Development

Activities (Em/ En/SD): Create a new document in a word processing application. Next, type in a line of text and copy the line five times. Now change each line a different font. Recopy the entire ser of lines three times. Finally, change the size of the first set to the 10-point text, the second to 18-point text, and the third set to 36 -point text.

1. Which of the smallest lines of text is most readable?
2. Which line of text stands out the most?

Assignment: The Internet and Multimedia

Sample questions

Part - A

1. Which of the following best defines multimedia?

   A) Text-only content

   B) Content that includes multiple types of media such as text, audio, video, and graphics

   C) Content that is delivered through the postal service

   D) Content that uses only video and audio

2. What is hypermedia?

   A) Text-only content B) Content that includes only audio and video

   C) Content that includes text and images

   D) Content that includes text, images, audio, video, and hyperlinks

3. Which of the following is an example of multimedia software?

   A) Microsoft Word B) Adobe Photoshop

   C) Windows Media Player D) Notepad

4. Which of the following is a primary use of multimedia in education?

   A) Printing documents B) Conducting online surveys

   C) Creating interactive tutorials D) Sending emails

5. What is the purpose of font editing tools in multimedia design?

   A) To create animations B) To design user interfaces

   C) To manipulate text appearance D) To edit audio files

Part B

6. What role do animations play in multimedia presentations?
7. How does multimedia enhance user engagement?
8. What are the applications of multimedia?
9. What are common audio file formats used in multimedia projects and their advantages?
10. Explain MIDI audio.

Part C

11. Explain how text is applied in Multimedia?
12. Explain the power of sound in Multimedia?
13. Explain the applications of multimedia?

Head of the Department
Ms. J. Anto Hepzie Bai

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