DEPARTMENT OF COMPUTER SCIENCE
Teaching Plan for the Academic Year 2023-2024
Semester I, III, V

Programme Educational Objectives (PEOs)

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

Programme Outcomes (POs)

PO	Upon completion of B.Sc. Degree Programme, the graduates will be able to:
PO – 1	utilize scientific knowledge to pursue higher studies in the relevant field.
PO – 2	create innovative ideas to enhance entrepreneurial skills for economic independence.
PO – 3	face challenging competitive examinations that offer rewarding careers.
PO – 4	reflect upon green initiatives and take responsible steps to build a sustainable environment.
PO – 5	handle ethical issues with social responsibility.
PO – 6	communicate effectively and collaborate successfully with peers to become competent professionals.

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 I: Python Programming
Semester	:	I
Course Code	:	SU231CC1

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	CIA	External	Total
							Marks		
SU231CC1	4	1	-	5	5	75	25	75	100

Objectives

1. To understand the syntax and semantics of Python programming language.
2. To know the usage of packages and Dictionaries

Course Outcomes

CO	Upon completion of this course, students will be able to:	PSO addressed	CL
CO - 1	remember fundamental python syntax and basic data types, and understand the concepts.	PSO-1	K1& K2
CO - 2	understand the functionality and purpose of control structures and apply the concepts to identify patterns and relationships.	PSO-2	K2 & K3
CO - 3	understand the purpose of functions, database and apply this to solve problems.	PSO-3	K2 & K3

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, Python Arrays					
	1	History of Python, Features of Python	2	K1(R)	PPT, Lecture Method.	Simple definitions, Questioning
	2	Literal, Constants, Variables, Identifiers, Keywords, Built-in Data Types, Output Statements, Input Statements	5	K2(U)	Demonstration PPT, Group Discussion, Problem Solving, Peer Tutoring.	Short summary, Quiz

	3	Comments, Indentation, Operators, Expressions, Type Conversions	4	K3(Ap)	PPT, Demonstration Group Discussion,	Discussions, Questioning
	4	Defining and Processing Arrays, Array methods.	4	K2(U)	PPT, Demonstration Group Discussion	Slip Test
II	**Control and Jump Statements**					
	1	Selection/ Conditional Branching statements: if, if-else, nested if and if-elif-else statements	5	K2(U)	PPT, Demonstration Problem Solving	Short test
	2	Iterative Statements: while loop, for loop, else suite in loop and nested loops.	5	K3(Ap)	Demonstration Problem Solving	Quiz
	3	break, continue and pass statements**.**	5	K3(Ap)	PPT, Demonstration	MCQ
III	**Functions, Strings and Modules**					
	1	Function Definition, Function Call, Variable Scope and its Lifetime-Return Statement	4	K2(U)	Demonstration PPT, Group Discussion, Problem Solving, Peer Tutoring.	Discussions, Questioning
	2	Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments, Recursion	4	K2(U)	Demonstration Group Discussion, Problem Solving	Quiz
	3	String operations, Immutable Strings, Built-in String Methods and Functions, String	3	K2(U)	Demonstration PPT, Group Discussion, Problem Solving, Peer Tutoring	Simple Definitions

		Comparison				
	4	Import statement, The Python module, dir() function, Modules and Namespace, Defining our own modules	4	K3(Ap)	Demonstration PPT, Problem Solving	Short summary
IV	**Lists, Tuples and Dictionaries**					
	1	Creating a list, Access values in List, Updating values in Lists, Nested lists, Basic list operations, List Methods	5	K1(R)	Demonstration PPT, Problem Solving	Online quiz, Problem solving short questions
	2	Tuples: Creating, Accessing, Updating and Deleting elements in a tuple, Nested tuples, Difference between lists and tuples.	5	K2(U)	Demonstration PPT, Problem Solving, Text Programming	MCQ, True/False, Short essays.
	3	Dictionaries: Creating, Accessing, Updating and Deleting Elements in a Dictionary, Dictionary Functions and Methods, Difference between Lists and Dictionaries.	5	K3(Ap)	Derivation and group discussion Circuit designing	Descriptive answers
V	**Python File Handling, Reading and Writing Files**					
	1	Types of files in Python, Opening and Closing files	4	K2(U)	Demonstration Problem Solving	Online quiz, Problem solving short questions
	2	Reading and Writing files: write() and writelines() methods,	5	K1(R)	Demonstration Problem Solving, Text	Descriptive answers MCQ,

					Programming	True/False, Short essays,
	3	File methods, File Positions, Renaming and deleting files.	5	K3(Ap)	Demonstration PPT, Problem Solving	Short test

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Employability

Activities (Em/ En/SD): Making students to write simple programs

Assignment: Operators

Seminar Topic: File methods

Sample questions

Part A

1. Literals of the form a+bi are called_____

2. Statements in if-else block should be properly aligned. Say True or False**.**

3. Function blocks starts with the keyword _____.

   a) def   b) try   c) pass   d) for

4. A tuple can be sliced. Say True or False.

5. ____ function is used to access files.

Part B

6. Describe the features of python?

7. Write short note on conditional branching statements supported by python.

8. Explain Function call with example

9. Differentiate between lists and tuples statement

10. Explain the types of files in python

Part C

11. Write a program to enter two integers and then perform all arithmetic operations.

12. Differentiate between pass and continue statement.

13. With suitable example explain about the return statement.

14. Give the properties of List.

15. Write a program to compare two files**.**

Head of the Department   **Course Instructor**
Ms. J.Anto Hepzie Bai   Ms.Bithiah Blessie V R

Department   **:**   **Computer Science**

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

Title of the Course   **:**   **Elective 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.
3. To apply the knowledge of computing and mathematical methods appropriate to various discipline.

Course Outcomes

CO	Upon completion of this course, the students will be able to:	PSO addressed	Cognitive level
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**
CO - 2	understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.	**PSO - 4**	**K2 & K4**
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**
CO - 4	analyze direct methods for solving linear systems.	**PSO - 4**	**K4 & K5**
CO - 5	evaluate methods for solving first and second order ordinary differentialequations.	**PSO - 5**	**K3 & K5**

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

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment/ Evaluation
	Fundamentals of Algebraic Equation					
	1.	Solution of algebraic and transcendental equations	2	K1(R)	Introductory session,	Short summary MCQ, True/False,
	2.	Bisection method	2	K2(U)	Lecture using Chalk and talk	Concept explanations, Problem-solving question
I	3.	Fixed point iteration method	2	K4(An)	Lecture using Chalk and talk, Group Discussion	True/False, Problem-solving questions
	4.	Newton Raphson method	2	K4(An)	Problem solving Method, Peer tutoring	Problem-solving questions, Finish a procedure in many steps
	5.	Linear system of equations	2	K3(Ap)	Problem solving Method, Group Discussion	Concept explanations, Problem-solving questions
	6.	Gauss elimination method.	2	K4(An)	Lecture using Chalk and talk, Problem solving	Problem-solving questions. True/False
	Iterative, Interpolation And Approximation					
	1.	Iterative methods	2	K1(R)	Lecture using Chalk and talk	Concept explanations, Finish a procedure in many steps
	2.	Gauss Jacobi and Gauss Seidel	3	K3(Ap)	Lecture using videos	Evaluation through short test,

II						Problem-solving questions
	3.	Interpolation with unequal intervals	2	K3(Ap)	Peer tutoring, Problem solving	Suggest formulae, Solve problems, MCQ
	4.	Lagrange's interpolation	1	K4(An)	Problem solving Method,	Suggest concept with examples, Suggest formulae
	Interpolation With Equal Interval					
	1.	Difference operators and relations	3	K1(R)	Lecture using Chalk and talk	Concept explanation, Problem-solving questions
III	2.	Interpolation with equal intervals	3	K2(U)	Lecturing with illustration, Problem solving	Evaluation through short test, Seminar, Problem-solving questions
	3.	Newton's Forward And Backward Difference Formulae.	3	K3(Ap)	Demonstration, PPT, Problem solving	Problem-solving questions, Finish a procedure in many steps
	Numerical Differentiation And Integration					
IV	1.	Approximation of derivatives using interpolation polynomials	2	K2(U)	Lecture using Chalk and talk	Concept explanations, Finish a procedure in many steps.
	2.	Numerical integration using Trapezoidal	2	K3(Ap)	Peer tutoring, Problem solving	Suggest formulae, Solve problems, Explain, Problem-

					solving questions
3.	Simpson's 1/3 rule	1	K4(An)	Group Discussion, Problem solving	Suggest formulae, Solve problems, MCQ, True/False
4.	Simpson's 3/8 rule	1	K5(E)	Group Discussion, Problem solving	Evaluation through short test, Seminar, Problem-solving questions
Initial Value Problems For Ordinary Differential Equations					
1.	Single step methods	2	K1(R)	Lecture using Chalk and talk	Concept explanations
2.	Taylor's series method	1	K3(Ap)	Group Discussion, Problem solving	Problem-solving questions
3.	Euler's method	1	K3(Ap)	Problem solving Method, Peer tutoring	Problem-solving questions
4.	Modified Euler's method	2	K4(An)	Group Discussion, Lecture using Chalk and talk	Problem-solving questions
5.	RungeKutta method for solving (first, second, Third) order equations	3	K4(An)	Problem solving, PPT,	Seminar, Problem-solving questions

(Row heading "V" appears in the leftmost column spanning the Initial Value Problems section.)

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) $3x + \sin x + 2 = 0$

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

2. Bi-section method is also known as _____.

   a) Regular falsi method   b) Bolzano method

   c) method of falsi position d) method of tangents

3. $\Delta^n(e^x) = $ _____.

   a) $e^x(e^h + 1)^n$ b) $e^{nx}(e^h + 1)$ c) $e^x(e^h - 1)^n$ d) $e^x(e^{nh} + 1)$

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. Can we 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 Jordan method

   $x + y = 2$

   $2x + 3y = 5$

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

9. Given the values

x	5	7	11	13	17
y	150	392	1452	2366	5202

   Evaluate y_9 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	**Course Instructor**
J. Anto Hepzie Bai	PriyankaNair

Department   : **Computer Science**

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

Title of the Course   : **Skill Enhancement Course I: NME: Office Automation**

Semester   : **I**

Course Code   : **SU231SE1**

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 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	Cognitive level
CO - 1	remember the fundamentals and understand the concepts.	PSO - 1	K1, K2
CO - 2	understand the functionality and purpose of commands and apply the concepts.	PSO - 2	K2, K3
CO - 3	understand the purpose of functions , database and apply this to solve problems.	PSO - 3	K2, K3

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, Concept explanations,
	2.	Output devices: Monitor, Printer	1	K1(R)	Lecture using Chalk	Simple definitions, MCQ, Recall steps, Concept definitions
	3.	Introduction to Operating systems & its features: DOS, UNIX, Windows	2	K2(U)	Lecture using Chalk and talk, Demonstration, PPT	Quiz, Suggest idea/concept with examples, Explain
	4.	Introduction to Programming Languages.	1	K3(Ap)	Lecture using Chalk and talk, Introductory session, Group Discussion, PPT	Problem-solving questions, Differentiate between various ideas, 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, Introductory session, Group Discussion, Mind mapping, Peer tutoring, Lecture using videos,	Evaluation through short test, MCQ, True/False, Short essays, Concept explanations,

					Demonstration, PPT, Review	
	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, Demonstration, PPT	Evaluation through short test, MCQ, True/False, Concept explanations, Short summary or overview
	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 statements, introduction to data analytics.	2	K3(Ap)	Lecture using Chalk and talk, Demonstration, PPT	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, short test
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 Power point, 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

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Part - A

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1. Which one of the following is an input devices?

    a) Keyboard   b) Monitor   c) Printer   d) None of the above

2. The word 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 Operating System.

7. Explain about Document Formatting.

8. How to prepare chart in Excel?

9. How will you sort a given data?

10. Write about Animation Effects in MS PowerPoint.

Part - C

11. Explain about Memory Unit.

12. Write about editing text 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   Dr. F. Fanax Femy
                                                    Dr.S.Immaculate Shyla

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	2	-	-	2	2	30	25	75	100

Objectives:

1. To obtain sufficient knowledge and skills enabling them to undertake further studies in Computer Science.

2. To implement different programming constructs and decomposition of problems into functions.

Course Outcomes

CO	On completion of this course, students will be able to:	PSO addressed	Cognitive level
CO - 1	study the basic knowledge of Computers and analyzing the programming languages.	**PSO-1**	**K1(R)**
CO - 2	study the data types, arithmetic operations, algorithms, DFD and develop program using flow chart and pseudocode.	**PSO-3**	**K2(U)**
CO - 3	apply the various operators, numeric data & character-based data and illustrate the concept of Loops	**PSO-2**	**K3 (Ap)**

Teaching Plain

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

Unit	Module	Topics	Teaching hours	Cognitive level	Pedagogy	Assessment/Evaluation
I	**Introduction**					
	1	Introduction, history	1	K1(R)	Lecture	Briefly explain the history of computer
	2	Characteristics and limitations of computer, Hardware/Anatomy of computer	1	K2(U)	Lecture	Discussion and questioning
	3	CPU, Memory, Secondary storage devices, Input devices and Output devices	1	K1(R) &K2(U)	Lecture	Examples and explain
	4	Type of computer	1	K1 (R)	PPT	Recall
	5	Software, Programming Languages	1	K1(R)&K2 (U)	Lecture	Short quiz

	6	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	1	K2(U)	Lecture	Recall, Quiz
	2	Arithmetic operators, Hierarchy of operations and output	1	K2(U)&K3 (AP)	Lecture	Explain and questioning
	3	Different Phases in Program Development Cycle (PDC),Structured Programming	1	K2(U)&K3 (AP)	PPT	Short summary
	4	Features of good algorithm, Benefits and drawbacks of algorithm	1	K3(AP)	Lecture	Problem solving
	5	Flowcharts advantage and limitations of flowcharts, when to use flowcharts	1	K3(AP)	PPT	Explain and short quiz
	6	Pseudo code, coding, documenting and testing a program	1	K2(U) & K3(AP)	Lecture	Simple definition
	7	Comment lines and types of errors, Program design, Modular programming	1	K2(U)	Lecture	Short test, summary
III	**Selection Structures**					
	1	Relational and Logical operators, selecting from several alternatives	2	K2(U)	Lecture	Recall, Short summary
	2	Applications of selection structures	1	K2(U)	Lecture	Explain and questioning
	3	Repetition Structures, counter controlled loops	2	K3(Ap)	PPT	Short summary
	4	Nested Loops, Applications of Repetition Structures	3	K3(Ap)	Lecture	Problem solving
IV	**Data and Array**					
	1	Numeric data and Character based data	1	K2(U) & K3(Ap)	Lecture	Explain and questioning

	2	Arrays, One dimensional array, two dimensional array	2	K2(U) & K3(Ap)	Lecture	Short summary
	3	Strings as arrays of characters	1	K2(U) & K3(Ap)	Lecture	Over view and quiz
V	**Data Flow Diagrams**					
	1	Definition, DFD symbols and types of DFDs	1	K1(R) & K2(U)	Lecture	Short summary
	2	Program Modules, Subprograms-Value and Reference parameters	2	K1(R) & K2(U)	Lecture	Quiz
	3	Scope of a variable , Functions , Recursion,Files	1	K1(R) & K2(U)	Lecture	Evaluation through short test
	4	File Basics, Creating and reading a sequential file-Modifying Sequential Files.	2	K1(R) & K2(U)	Seminar	Suggest idea with examples

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, selecting from several alternatives.

Seminar Topic: File Basics, Creating and reading a sequential file- Modifying Sequential Files.

Sample questions

PART A

1) Which of the following is the first automatic digital computer?

   a) Marks   b) Abacus   c) Difference engine

2) Which technology was used in first generate the computer?

   a)Transistors b) Vac-cum Tube   c) Microprocessor

3) Software is a set of --------------------------.

4) Expansion of FORTRAN.

5) Which is the system software?

    a) windows   b) MS Office   c) Paint

PART B

6) Name the two machine development by Charles Babbage.

7) Explain secondary storage devices and write some examples.

8) Write the functions of CPU.

9) Write the advantage and disadvantage of flow chart.

10) Explain Data Flow diagram.

PART C

11) Write the details about the generation of computer.

12) Explain the classification of computer.

13) Describe selection structure.

14) Write the difference between primary memory and secondary memory.

15) Explain about arrays and their types.

Head of the Department   Course Instructor
J. Anto Hepzie Bai   Monisha.M

Department   **: Computer Science**

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

Title of the Course   **: Major Core III: Programming in Java**

Semester   **: III**

Course Code   **: SC2131**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SC2131	4	-	-	4	4	60	30	70	100

Objectives

1. To introduce the principles of programming language and creation of Java program
2. To understand the knowledge about the class fundamentals and methods

3. Students will learn about Packages and Interface

4. To acquire the knowledge about I/O Applet and AWT classes.

Course Outcomes

CO	Upon completion of this course, the students will be able to:	PSO addressed	Cognitive level
CO - 1	learn how to implement Object Oriented design with Java and creating a java program.	**PSO - 1**	**K6(C)**
CO - 2	learn how to extend java classes with inheritance and dynamic bindings.	**PSO - 1**	**K4(An)**
CO - 3	define the fundamental ideas about exception handling in java application also learn more details about packages and interface	**PSO - 1**	**K2(U)**
CO - 4	learn java generics and how to use the java collections API ,also learn to write the applet code and understand the knowledge about AWT classes	**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	**Genesis of Java**					
	1.	Creation of Java, Why Java is important to Internet.	2	K2(U), K4(An)	Lecture	Simple definitions, Questioning
	2.	An Overview of Object Oriented Program, Data Types	3	K3(Ap), K2(U)	Lecture cum demonstration	Short summary, Quiz
	3.	Type conversion and casting, Automatic type conversion in Expression	3	K3(Ap)	Lecture with illustrations,	Discussions, Questioning
	4.	Arrays: One dimensional arrays and Multi-	3	K3(Ap)	Lecture with ppt	Simple definitions and

						Questioning
		dimensional Arrays.				
	5.	Operators and Control structure	3	K3(Ap)	Lecture cum demonstration	Slip Test
II	**Class Fundamental**					
	1.	Declaring objects, assigning objects reference variable.	3	K3(Ap)	Lecture with PPT	Short test
	2.	Introducing methods, constructors, garbage collection, Finalize method()	4	K6(C)	Lecture with Illustrations	Quiz
	3.	A Closer look at Methods and Classes, Overloading methods.	3	K3(Ap), K6(C)	Lecture, Group Discussion	Evaluation through short test
	4.	Inheritance basics and types, methods overriding	3	K4(An), K6(C)	Lecture, Illustration by examples, Discussion	Suggest idea with examples
	5	Using abstract class, using final with inheritance	3	K2(U)	Lecture with PPT	Concept Explanations
III	**Packages and Interface**					
	1.	Exception Handling, create your own exception and subclasses.	2	K3(Ap)	Lecture with Demonstration, PPT	Short test
	2.	Multi-threaded programming, java thread model, Main thread.	3	K3(Ap)	Lecture, Group Discussion	Discussions, Questioning
	3.	Creating a thread.	2	K6(C)	Lecture with PPT	Discussions

	4.	Multi threads, using isAlive() and join().	3	K2(U), K3(Ap)	Lecture cum demonstration	Seminar
	5.	Thread Priorities	3	K2(U)	Lecture with PPT	Quiz, MCQ
IV	**I/O Applets**					
	1.	I/O basics reading console input, writing console output.	3	K3(Ap)	Lecture with PPT	Concept explanations
	2.	Reading and writing files, The applet class, Applet architecture.	4	K2(U)	Lecture with PPT, Group Discussion	Discussions, Questioning
	3.	Applet display Method, Requesting repainting	4	K4(An)	Lecture with Demonstration	Seminar
	4.	HTML applet tag, parameter to applet, audio clip interface	4	K4(An)	Lecture with illustration	Quiz
	5.	Event handling mechanism, Event classes ,source of event, event listener interface	2	K6(C)	Lecture with PPT	Recall steps
V	**AWT Classes**					
	1.	Windows fundamental, working with frames	3	K2(U)	Lecture with PPT, Discussion	Short test
	2.	Graphics using Awt controls	4	K2(U)	Lecture with PPT, Discussion	Explain
	3.	Using buttons applying boxes, check box group.	3	K3(Ap)	Lecture with demonstration	Short summary
	4.	Choice controls, using a text field, using a text area	3	K3(Ap)	Lecture, with demonstration	Concept Explanations

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Entrepreneurship

Activities (Em/ En/SD): Creating an applet

Assignment: AWT classes

Seminar Topic: Multi-threaded Programing and working with Frames

Sample Questions

PART A

1. _____ Operator is used to create an object.

   a) Class   b) New   c) Print   d) main

2. Which of the following is java keyword?

   a) External   b) implement   c) throw   d) integer

3. What is the value of a[3] as the result of the following array declaration?

   a) 1   b) 2   c) 3   d) 4

4. Which of this function is called to display the output of an applet?

   a) display()   b) paint()   c) display applet()   d) printapplet()

5. When we invoke repaint() for a JAVA .awt. Component object, the AWT invokes _____ methods.

Part B

6. List the basic data types used in java. Explain with suitable examples.

7. How objects are created from a class in java? Explain.

8. Elaborate the syntax and example to create a thread in jav.

9. How do applet differ from application programs?

10. Describe the properties of check box group.

Part C

11. Discuss the purpose of switch statement in java.

12. Compare and contrast overriding and overloading a method.

13. Explain how exception handling mechanism can be used in a program,

14. Illustrate the delegation event model in event handling.

15. Discuss working with Graphic using AWT controls.

Head of the Department   **Course Instructor**
J. Anto Hepzie Bai   C.Sherisha

Department   : Computer Science

Class   : II B.Sc Computer Science

Title of the Course : Major Core IV: Data Structures and Algorithms

Semester   : III

Course Code   : SC2132

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	CIA	External	Total
							Marks		
SC2132	4	-	-	4	4	60	30	70	100

Objectives

1. To introduce the various data structures and their implementations.

2. Study various sorting algorithms

Course Outcomes

CO	Upon completion of this course, students will be able to:	PSO addressed	CL
CO - 1	summarize different categories of data Structures	**PSO-1**	**U**
CO - 2	identify different parameters to analyze the performance of an algorithm.	**PSO-2**	**AP**
CO - 3	explain the significance of dynamic memory management Techniques	**PSO-3**	**U**
CO - 4	design algorithms to perform operations with Linear and Nonlinear data structures	**PSO – 4**	**AP**
CO - 5	illustrate various technique to for searching, Sorting and hashing	**PSO –2**	**U**
CO - 6	choose appropriate data structures to solve real world problems efficiently.	**PSO – 4**	**AP**

Teaching plan

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

Unit	Module	Topic	Teaching Hours	Cognitive level	Pedagogy	Assessment/Evaluation
I	**Algorithms, Arrays, Stacks, Queues**					
	1	Introduction: Analyzing algorithms, Arrays:	5	K2(U)	PPT, Lecture Method.	Short Question, Quiz

		Representation of Arrays.				
	2	Implementation of Stacks and queues.	**3**	K2(U)	Demonstration PPT, Group Discussion, Peer Tutoring.	Simple definitions and Questioning
	3	Evaluation of Expression, Infix to postfix Conversion	**2**	K3(Ap)	PPT, Demonstration Group Discussion	Slip Test
	4	Multiple stacks and Queues. Sparse Matrices.	**2**	K2(U)	PPT, Demonstration Group Discussion	Discussions, Questioning
II	**Linked list**					
	1	Singly Linked list, Linked stacks and queues.	**4**	K2(U)	PPT, Demonstration Problem Solving	Simple definitions and Questioning
	2	Polynomial addition. More on linked Lists Doubly linked List and Dynamic Storage Management.	**6**	K3(Ap)	Demonstration Problem Solving	Slip Test
	3	Garbage collection and compaction.	**2**	K3(Ap)	PPT, Lecture	Evaluation through short test
III	**Trees and Graphs**					
	1	Basic Terminology, Binary Trees Binary Tree representations	**3**	K2(U)	Demonstration PPT, Group Discussion, Peer Tutoring.	Short summary, Quiz
	2	Binary trees Traversal More on Binary Tree.	**3**	K2(U)	Demonstration Group Discussion	Discussions, Questioning
	3	Graphs: Terminology and	**3**	K2(U)	Demonstration PPT, Peer	

		Representations			Tutoring.	Quiz, MCQ
	4	Traversals, connected components and spanning Trees, Single Source Shortest path problem.	**3**	K3(Ap)	Demonstration PPT, Problem Solving,	Simple Definitions
IV	**Symbol Tables and External Sorting**					
	1	Symbol Tables: Static Tree Tables, Dynamic Tree Tables. Hash Tables: Hashing Functions, Overflow Handling.	**5**	K2(U)	Lecture	Discussions
	2	External sorting: Storage Devices, Sorting with Disks: K-way merging	**5**	K2(U)	Lecture with PPT Discussion	Quiz
	3	Sorting with tapes: Balanced Merge sorts.	**5**	K3(Ap)	Lecture with PPT	Short test
V	**Internal sorting, Files, Index Techniques**					
	1	Internal sorting: Insertion Sort, Quick sort, 2 way Merge Sort, Heap Sort, Sorting on keys.	**4**	K2(U)	Demonstration Problem Solving, Text Programming	Online quiz, Problem solving short questions
	2	Files, Queries and sequential organizations, Index Techniques: Cylinder Surface Indexing, Hashed Indexes	**4**	K2(U)	Demonstration Problem Solving, Text Programming	Descriptive answers MCQ,
	3	File organization:	**4**	K2(U)	Demonstration PPT,	Discussions,

		Sequential organizations , Random organizations, Linked organizations			Problem Solving, Text Programming	Questioning

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Employability

Activities (Em/ En/SD): Students can able to write algorithms.

Assignment: Hash Tables

Seminar Topic: Internal sorting

Sample questions

Part A

1. _____ is the father of computer.
2. _____ is a collection of data.
3. _____is a unique node in the tree.

   (a) Parent node   (b) Root node   (c) Child node (d) Degree of the node
4. Dynamic tables not maintained as binary search trees. Say true of false.
5. Tracks are divided into _____

Part B

6. Define Algorithm. Write the categories to be satisfied after writing the algorithm.
7. Evaluate about storage compaction.
8. Describe Dynamic Tree Tables**.**
9. Explain Quick sort**.**
10. Evaluate about magnetic tapes.

Part C

11. Write brief note on Representation of Arrays.
12. Evaluate– Polynomial Addiction.
13. Write brief note on Basic Terminologies of Trees.
14. Define Spanning Tree and Explain its Algorithms.
15. Write about File organization.

Head of the Department   **Course Instructor**
Ms.J.Anto Hepzie Bai   Ms.Bithiah Blessie V R

Department　　　　**: Computer Science**

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

Title of the Course　**: Allied III: Theory: Numerical and Statistical Methods**

Semester　　　　　**: III**

Course Code　　　**: SA2131**

Course Code	L	T	P	Credits	Inst. Hours	Total Hours	Marks		
							CIA	External	Total
SA2131	3	-	-	3	3	45	30	70	100

Objectives

1. To equip the students with statistical tools and concepts that help in decision making.

2. To apply the knowledge of computing and mathematical methods appropriate to various discipline.

Course Outcomes

CO	Upon completion of this course, the students will be able to:	PSO addressed	Cognitive level
CO - 1	solve an algebraic and Transcendental Equations using an appropriate numerical method	**PSO – 1**	**K3 (A)**
CO - 2	find an error analysis for a given numerical method	**PSO – 4**	**K5 (E)**
CO - 3	solve a simultaneous equation using an appropriate numerical method	**PSO – 4**	**K3 (A)**
CO - 4	find a polynomial using interpolation methods	**PSO – 2**	**K5 (E)**
CO - 5	find Arithmetic Mean, Median and Mode for the frequency distribution	**PSO – 3**	**K5 (E)**
CO - 6	determine correlation and rank correlation coefficient between two variables	**PSO – 2**	**K5 (E)**
CO - 7	find a regression equation using the given data	**PSO – 4**	**K5 (E)**

Teaching plan

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

Unit	Module	Topics	Teaching Hours	Cognitive level	Pedagogy	Assessment/ Evaluation
I						
	1	Introduction to algebraic and transcendental equations	1	K3 (A)	Introductory session, Problem solving	Questioning, Recall steps, concept definitions, concept with examples
	2	Errors in Numerical Computation	1	K5 (E)	Lecture with illustration, Problem solving	concept explanations, Quiz
	3	Iteration Method - Procedure, Problems	3	K5 (E)	Lecture with illustration, Problem solving, Group Discussion	Discussion, Slip Test, concept explanations, Solve problems
	4	Bisection Method - Procedure, Problems	4	K5 (E)	Lecture with illustration, Problem solving, PPT	concept explanations, Evaluation through short test, solve problems
II						
	1	Introduction to Simultaneous Equations	1	K3 (A)	Introductory session, Problem solving	Recall steps, Questioning, concept definitions, concept with examples, solve problems

	2	Back Substitution Method - Procedure	2	K3 (A)	Lecture with illustration	concept explanations
	3	Gauss Elimination Method – Procedure, Problems	3	K5 (E)	Lecture with illustration, Problem solving	concept explanations, Solve problems
	4	Gauss Jordan Elimination Method - Procedure, Problems	3	K5 (E)	Lecture with illustration, Problem solving, Group Discussion	Discussion, concept explanations, Evaluation through short test, Solve problems
III						
	1	Introduction to interpolation	1	K3 (A)	Introductory session, Problem solving	concept definitions, concept with examples, Questioning
	2	Newton's forward interpolation formula – Theorem, Problems	2	K5 (E)	Lecture with illustration, Peer tutoring, Problem solving	concept explanations, Evaluation through short test, Solve problems
	3	Newton's backward interpolation formulae – Theorem, Problems	2	K5 (E)	Lecture with illustration, Group Discussion, Problem solving	concept explanations, Quiz, Solve problems, Discussion
	4	Lagrange's interpolation formula – Theorem, Problems	4	K5 (E)	Lecture with illustration, Problem solving	concept explanations, Solve problems
IV						

		1	Introduction to Measures of Central tendency	1	K3 (A)	Introductory session, Problem solving	concept definitions, concept with examples, Questioning
		2	Mean - Definition, Theorems, Problems	3	K5 (E)	Lecture with illustration, Peer tutoring, Problem solving	concept explanations, Solve problems
		3	Median - Definition, Theorem, Problems	3	K5 (E)	Lecture with illustration, Problem solving	concept explanations, Evaluation through short test, Solve problems
		4	Mode - Definition, Problems	2	K5 (E)	Lecture with illustration, Group Discussion, Problem solving	concept definitions, Solve problems
V							
		1	Introduction to correlation and regression	1	K3 (A)	Introductory session, Lecture with illustration	concept definitions, concept with examples
		2	Correlation – Definition, Theorems, Problems	3	K5 (E)	Lecture with illustration, Group Discussion, Problem solving	Slip Test, Assignment, Solve problems
		3	Rank correlation – Theorem, Problems	2	K5 (E)	Lecture with illustration, Problem solving	concept explanations, Quiz, Solve problems

	4	Regression – Definition, Theorems, Problems	3	K5 (E)	Lecture with illustration, Problem solving	concept explanations, Evaluation through short test, Solve problems

Course Focussing on Employability/ Entrepreneurship/ Skill Development: Entrepreneurship

Activities (En): Group discussion, Problem solving

Assignment: Correlation

Seminar Topic: Nil

Sample questions

<div align="center">Part A</div>

1. The _____ method is simple but the convergence is very slow.

   (a) bisection (b) iteration (c) Newton's (d) Lagrange's

2. Gauss elimination method is a direct method which consists of transforming the given system of simultaneous equations to an equivalent _____.

3. State True or False: Newton's backward interpolation formula is used to interpolate the values of y near the end of the set of tabulated values.

4. The _____ are statistical constants which enable us to comprehend in a single effort the significance of the whole.

5. Spearman's formula for rank correlation coefficient is _____.

<div align="center">Part B</div>

6. Can we 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 system of equations using Gaussian elimination method
   $x + y + z = 9$; $2x - 3y + 4z = 13$; $3x + 4y + 5z = 40$.

8. Use Lagrange's interpolation formula to find the value of y at x = 6 from the following data

x	3	7	9	10
y	168	120	72	63

9. Mean weight of 80 students in two classes A and B in 50 Kgs. There are 45 students in class A. The mean weight of the students in class B is 48. Find the mean weight of the students in class A.

10. The coefficient of rank correlation of marks obtained by 10 students in Mathematics and Physics was found to be 0.8. It was later discovered that the difference in ranks in two subjects obtained by one of the students was wrongly taken as 5 instead of 8. Find the correct coefficient of rank correlation.

Part C

11. Find a real root of the equation $x^3 - x - 11 = 0$ by using bisection method.
12. Solve the following system of equations by Gauss Jordan method
$5x - 2y + 3z = 18; \quad x + 7y - 3z = -22; \quad 2x - y + 6z = 22$.
13. 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

14. Find the median and quartile marks of 10 students in Statistics test whose marks are given as 40, 90, 61, 68, 72, 43, 50, 84, 75, 33.
15. The two variables x and y have the regression lines 3x+2y-26= 0 and 6x+y-31=0.
    Find (i) the mean values of x and y.
        (ii) the correlation coefficient between x and y.
        (iii) the variance of y if the variance of x is 25.

Head of the Department
J.Anto Hepzie Bai

Course Instructor
Dr.C.Jenila

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 introduce the fundamentals of Internet, and the principles of web design.

2. To construct basic websites using HTML and Cascading Style Sheets.

3. To build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.

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)**
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 XHT ML, 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)	Lecture cum demonstration	Short summary, Quiz
	3.	Basic Links, Creating Links with the <a> Element	3	K3(Ap)	Lecture with illustrations, PPT	Discussions, Questioning
	4.	Adding Images Using the <img>	2	K3(Ap)	Lecture using videos	Simple definitions

						and Questioning
	5.	Using Images as Links	3	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 PPT	Short test
	2.	Introducing Tables, Basic Table Elements and Attributes	3	K6(C)	Lecture with Illustrations	Quiz
	3.	Adding a <caption> to a Table, Grouping Section of a Table, Nested Tables	3	K3(Ap), K6(C)	Lecture, Group Discussion	Evaluation through short test
	4.	Introducing Forms, Form Controls	4	K4(An), K6(C)	Lecture, Illustration by examples, Discussion	Suggest idea with examples
	5	Sending Form Data to the Server	2	K2(U)	Lecture with PPT	Concept Explanations
III	**Frames, Cascading Style Sheets**					
	1.	Introducing Frameset, The <frameset> Element	2	K3(Ap)	Lecture with Demonstration, PPT	Short test
	2.	The <frame> Element, Creating Links Between Frames	3	K3(Ap)	Lecture, Group Discussion	Discussions, Questioning
	3.	Nested Framesets	2	K6(C)	Lecture with PPT	Discussions
	4.	Introducing CSS, Where you can Add CSS Rules, CSS Properties	3	K2(U), K3(Ap)	Lecture cum demonstration	Seminar

	5.	Controlling Text, Text Formatting	3	K2(U)	Lecture with PPT	Quiz, MCQ
	6.	Text Pseudo Classes	3	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	Concept explanations
	2.	Variables, Operators	4	K2(U)	Lecture with PPT, Group Discussion	Discussions, Questioning
	3.	Control Structures, Conditional Statements	4	K4(An)	Lecture with Demonstration	Seminar
	4.	Looping, Functions, Built in Functions	4	K4(An)	Lecture with illustration	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	4	K2(U)	Lecture with PPT, Discussion	Short test
	2.	Form Object, Navigator object, Screen object	3	K2(U)	Lecture with PPT, Discussion	Explain
	3.	Events, Event Handlers	4	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 their own personal websites.

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

Google Classroom

Seminar Topic: Window Object, Browser Objects

Sample questions:

Part A

1. Which is the group element?

    a) cite   b) div   c) small   d) kbd

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. The -------------- attribute prevents a user from resizing the frame

4. Operators perform functions on variables. Say "True" or "False"

5. The expansion of DOM is -----------------------------.

Part B

6. Describe the presentational elements with suitable examples.

7. Demonstrate how videos can be added to your web site.

8. Describe the properties that control the appearance of text in your documents.

9. How do you add a script to your pages?

10. Write a short note on window object in JavaScript

Part C

11. Analyze ordered and unordered list with suitable examples.

12. How do you construct a table,span rows and columns in it?

13. Elucidate nested framesets 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   **Course Instructor**

J. Anto Hepzie Bai   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	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 Plain

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	Short summary, Quiz
	3	Model Database Languages, database users and administrators	3	K1(R) & K2(U)	Lecture	Discussions, Questioning
	4	Transaction Management, database system structure	2	K1(U)	Lecture	Program with explanation
	5	Application Architecture, data models: Basic concepts	3	K1(R) & K2(U)	Lecture	Simple definitions, Questioning

	6	Constraints, keys, ER diagram, Week Entity	3	K1(R) & K2(U)	PPT	Short summary, Quiz
	7	Extended ER features, UML, Relational model	**4**	K1(R) & K2(U)	PPT	Discussions, Questioning
II	**SQL**					
	1	SQL introduction, background, basic structure	2	K2(U)	Lecture	Simple definitions, Questioning
	2	Set operation, aggregate function, null values	3	K2(U)	Lecture	Short summary, Quiz
	3	Nested Sub Queries, views, Modification of the database	4	K1(R) & K2(U)	Lecture	Discussions, Questioning
	4	Data definition language, embed SQL, Dynamic SQL	4	K1(R) & K2(U)	Lecture	Simple definitions and Questioning
III	**Advance SQL**					
	1	Advance SQL, Integrity and Security	2	K1(R) & K2(U)	Lecture	Simple definitions, Questioning
	2	Domain, constraints, referential integrity	4	K2(U) & K3(Ap)	Lecture	Short summary
	3	Assertions, Triggers, security and Authorization	4	K2(U) & K3(Ap)	Lecture	Discussions, Questioning
	4	Encryption and Authentication	2	K2(U)	Lecture	Recall, Questioning
IV	**Relational Database Design**					
	1	Introduction ,FNF, Pitfalls in relation database design	4	K4(An)	PPT	Short test
	2	Functional Dependencies	1	K4(An)	PPT	Quiz
	3	Boyee-Codd Normal Form, Third Normal Form	3	K4(An) &K2(U)	Lecture	Evaluation through short test

	4	Fourth Normal Form, overall database design process	3	K4(An) & K2(U)	Lecture	Suggest idea with examples
V	**Transaction Management**					
	1	Introduction, transaction concepts	1	K2(U) & K4(An)	Lecture	Short test
	2	States, Serializability	2	K2(U) & K4(An)	Lecture	Quiz
	3	Lock based concurrency control, Locks	2	K2(U) & K4(An)	PPT	Evaluation through short test
	4	Granting, Timestamps, Timestamp ordering protocol	3	K2(U) & K3(Ap)	Lecture	Suggest idea with examples
	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: Transaction Management

Sample questions

PART A

1) Which of the following is the full form of RDBMS?
   a) Relational Data Management System   b) Relational Database Management System
   c) Relative Database Management Systemd) Regional Data Management System

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

3) Which of the following commands do we use to delete a relation (RDBMS) from a database?
   a) delete table RDBMS   b) drop table RDBMS
   c) delete from RDBMS   d) drop relation RDBMS

4) Using the _____ clause retains only one copy of identical tuples
   a) distinct   b) is not null   c) no repeat   d) from

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

PART B

6) Explain the difference between RDBMS and DBMS.

7) What is the difference between Data concurrency and data consistency?

8) What is Normalization in DBMS?

9) What are UNION, MINUS, and INTERSECT commands in DBMS?

10) What is a trigger?

PART C

11) Explain about ER model.

12) What is Large Database management control?

13) Define the encryption and authentication.

14) Explain about functional dependencies.

15) Explain in detail about Timestamp-Based Protocols.

Head of the Department   Course Instructor
J. Anto Hepzie Bai   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	**4**	**-**	**-**	**4**	**4**	**60**	**30**	**70**	**100**

Objectives

   1) To introduce the mobile computing technology and mobile communication.

   2) To understands the knowledge about the medium access control and the power control for medium access.

3) To develop mobile application languages and Framework-Java, J2ME, Python and .Net.

Course Outcomes

CO	Upon completion of this course, the students will be able to:	PSO addressed	Cognitive level
CO - 1	understand the mobile communication and mobile computing architecture and solving a security issues.	**PSO - 1**	**K6(C)**
CO - 2	analyse the Open System Interconnection Layers and mobile device database management.	**PSO - 1**	**K4(An)**
CO - 3	illustrate the idea about the mobile Ad hoc network and wireless sensor network.	**PSO - 1**	**K2(U)**
CO - 4	apply the knowledge mobile computing application languages and Framework. To understand the mobile operating system.	**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	**Mobile Communications, Mobile Computing**					
	1.	Introducing mobile computing techniques, mobile communication.	3	K2(U), K4(An)	Lecture	Simple definitions, Questioning
	2.	Mobile computing paradigm, mobile and hand held devices.	3	K3(Ap), K2(U)	Lecture cum demonstration	Short summary, Quiz
	3.	Limitations of mobile and hand held devices.	2	K3(Ap)	Lecture with illustrations,	Discussions, Questioning
	4.	GSM, services, System	3	K3(Ap)	Lecture with ppt	Simple definitions

		architecture, protocols				and Questioning
	5.	Localization, Calling, Security, New Data services, GPRS	3	K3(Ap)	Lecture with ppt	Slip Test
II	**Wireless Medium Access Control, CDMA, 3G, WiMax.**					
	1.	Motivation for a specialized MAC, Hidden and exposed terminal and near and far terminals.	3	K3(Ap)	Lecture	Short test
	2.	SDMA, FDMA, TDMA, CDMA	3	K6(C)	Lecture with Illustrations	Quiz
	3.	Mobile network layer IP and Mobile IP Network Layers	3	K3(Ap), K6(C)	Lecture, Group Discussion	Evaluation through short test
	4.	Location Management, Registration.	3	K4(An), K6(C)	Lecture, Illustration by examples, Discussion	Suggest idea with examples
	5	Route Optimization, DHCP.	3	K2(U)	Lecture with PPT	Concept Explanations
III	**Mobile transport Layer**					
	1.	Conventional TCP/IP protocols, Indirect TCP.	4	K3(Ap)	Lecture with Demonstration, PPT	Short test
	2.	Snooping TCP, Mobile TCP, Transport Layer Protocol for Mobile Networks.	4	K3(Ap)	Lecture, Group Discussion	Discussions, Questioning
	3.	Database issues, database hoarding and caching techniques.	4	K6(C)	Lecture with PPT	Discussions

		4.	Transactional models, query processing, Data recovery process & QoS issues	4	K2(U), K3(Ap)	Lecture cum demonstration	Seminar
IV	**Database Management Issues in Mobile Computing**						
		1.	Communication asymmetry	3	K3(Ap)	Lecture with PPT	Concept explanations
		2.	Classification of data delivery mechanism.	3	K2(U)	Lecture , Group Discussion	Discussions, Questioning
		3.	Data dissemination, Broadcast Models.	4	K4(An)	Lecture with Demonstration	Seminar
		4.	Selective tuning and indexing methods, Data synchronization.	4	K4(An)	Lecture with illustration	Quiz
V	**Mobile Ad hoc and networks, Mobile application languages**						
		1.	Introduction, application & challenges of a MANET.	4	K2(U)	Lecture with PPT, Discussion	Short test
		2.	Routing, Classification of routing algorithm.	4	K2(U)	Lecture with PPT, Discussion	Explain
		3.	Algorithm such as DSR, AODV, DSDV, mobile agents.	4	K3(Ap)	Lecture with demonstration	Short summary
		4.	Protocols and platforms for mobile computing, WAP, Bluetooth, Android security.	4	K3(Ap)	Lecture, with demonstration	Concept Explanations

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

Activities (Em/ En/SD): Making students to prepare a client server model

Assignment: Mobile Computing Operating System.

Seminar Topic: Wireless LAN and personal Area Network Protocols.

Sample questions:

Part A

1. Which of the following usually stores all user-related data that is also relevant to GSM mobile systems?

   a) VLR   b) HMR   c) CMR   d) SIM

2. The expansion of GPRS_____.

3. The expansion of SIM

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

   a) CDMA   b) GPRS   c) GSM   d) VLR

5. The expansion of GSR_____.

Part B

6. List out the limitations of mobile and handheld devices.
7. Explain in detail about Exposed station problem?
8. What are the requirements for implementing Mobile IP?
9. Explain how API at mobile device sending queries and retrieving data from Local database.
10. Describe the role of software in data synchronization for mobile nodes.

Part C

11. Describe the Two-tier Client–Server Architecture in mobile environment. How it can be expanded to n-tier architecture?
12. What is broadcasting? Explain its architecture with applications.
13. Discuss about indirect TCP and Snooping TCP.
14. How to pass messages using Dynamic Source Routing algorithm? Explain with Example.
15. Explain how GPRS networks replace circuit switch services on second generation GSM communications. Explain its services and operations in detail.

Head of the Department   **Course Instructor**
J. Anto Hepzie Bai   C. Sherisha

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	CIA	External	Total
							Marks		
SC2154	4	-	-	3	4	60	30	70	100

Objectives

> To understand the standards available for different audio,video and text applications

3. To learn various multimedia authoring systems in multimedia production team

Course outcome

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 Plain

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

Unit	Module	Topics	Teaching hours	Cognitive level	Pedagogy	Assessment/Evaluation
I	**Multimedia**					
	1	Multimedia definition, Use of Multimedia	2	K6(C)	Lecture	Short summary of multimedia
	2	Delivering Multimedia, Text	2	K2(U) & K6(C)	Lecture	Recall

	3	About Fonts and Faces, Using text in multimedia	2	K2(U) & K6(C)	Lecture	Disscusion , questioning
	4	Computers and text, font editing	2	K2(U) & K6(C)	Lecture	Simple definitions
	5	Design tools, hypermedia and hypertext	2	K2(U) & K6(C)	Lecture	recall
II	**Images**					
	1	Images: Plan Approach , Organize tools	1	K4(AP)	Lecture with demonstration	Simple definitions, Questioning
	2	Configure Computer Workspace, Making Still	2	K4(AP)	Ppt and explanation	Short summary, Quiz
	3	Color, image file formats, Sound	2	K4(AP) & K2(U)	Lecture	Discussions, Questioning
	4	The power of sound ,Midi Audio	2	K4(AP) & K2(U)	explanation	Simple definitions and Questioning
	5	Multimedia System Sound, Audio file formats	1	K4(AP) & K2(U)	discussion	Simple definitions, Questioning
	6	Adding sound to multimedia project	2	K4(AP) & K2(U)	lecture	Short summary, Quiz
III	**Animation**					
	1	The power of motion, Principles of Animation	2	K3(An)	lecture	Discussions, Questioning
	2	Animation by computer, Making Animation that work	3	K3(An)	lecture	Discussions
	3	Using video, working with video and displays	2	K3(An) & K2(U)	lecture	Seminar
	4	Obtaining video clips	2	K3(An)	PPT	Quiz
IV	**Making Multimedia**					

	1	Introduction of making multimedia, the stage of multimedia project	2	K3(An)	Lecture	Short test
	2	The intangible needs, the hardware needs	3	K4(Ap)	Lecture	Explain
	3	The software needs	2	K2(U) & K3(An)	Lecture	Short summary
	4	Multimedia Production team	2	K2(U) & K3(An)	lecture	Concept Explanations
V	**Planning and Costing**					
	1	The process of making multimedia, Scheduling	2	K4(An)	Lecture with demonstration	Concept explanations
	2	Estimating, RFPs and Bid Proposals	3	K2(U) & K4(An)	Lecture with demonstration	Discussions, Questioning
	3	Designing and Producing, Designing	2	K3(Ap)	PPT	Seminar
	4	Content and talent, acquiring content and acquiring talent	3	K4(An)	Seminar	Seminar

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

Activities (Em/En/SD): Making students to design and develop the videos editing and animations

Assignment: Multimedia use, font and text using multimedia

Seminar Topic: Planning and Costing

Sample questions

PART A

1. Web pages are coded using:
   a) Unicode   b) ASCII
   c) File Transfer Protocol   d) Hypertext Markup Language
2. A 24-bit image is capable of representing how many different colors?
   a) 16,772,216   b) 16   c)256   d) 65,536

3. Audio recorded at 44.1kHz,16-bit stereo is considered ---------------

a) Phone-quality   b) Voice-quality   c) CD _quality   d) FM-quality

4. An HDTV display screen may be made from:

a) long chain polymers   b) Bakelite   c) silver tubes   d) light emitting diodes

5. A database is a collection of systematically stored records or information stored in a rows and columns. Say True or False.

PART B

6. Write about use of multimedia.

7. Differences between the Midi Vs Digital Audio.

8. What are principles of animation?

9. What is the intangible needs?

10. Write about RFP's and Bid Proposals.

PART C

11. Describe what characteristics a typeface might have.

12. Briefly about adding sound to multimedia project.

13. Write the principles of animation.

14. Write briefly about designing and producing.

15. Write about the software needs.

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