

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**  
**COURSE PLAN June - November 2024**

**Department** : Computer Science  
**Name/s of the Faculty** : Jeyapriya U  
**Course Title** : Programming with Python  
**Course Code** : 23CS/PC/PP14  
**Shift** : II

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
CO1	define the structure and concepts of python programming	K1
CO2	demonstrate the programming concepts using python	K2
CO3	apply the programming knowledge learnt using python and solve any given problem	K3
CO4	compare the different ways of solving a problem and find out an effective one	K4
CO5	evaluate the given problem and write an effective and efficient code to solve the same	K5,K6

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day Order 4 - 6)	1	<b>1.1 Introduction to Python Programming</b> History of Python- Getting Started with Python-Programming Style and Documentation- Programming Errors	K1	3	CO1	Group Discussion Case Analysis Demonstration	Discussion Quiz
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	<b>1.2 Elementary Programming</b> Writing A Simple Program-Reading Input from Console-Identifiers-Variables-Assignment Statements and Expressions-Simultaneous Assignments-Named Constants	K1-K5	6	CO1-5	Lecture Group Discussion	Practical exercise Case study

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July 5 – 12, 2024 (Day Order 1 - 6)	1	Numeric Data Types and Operators-Evaluating Expressions and Operator Precedence Augmented Assignment Operators-Type Conversions and Rounding	K1-K5	6	CO1-5	Lecture Group Discussion Case Study	Practical exercise - Displaying Current Time -Computing Distance
July 15 – 23, 2024 (Day Order 1 - 6)	2	2.1 Drawing Various Shapes- Drawing with Colors and Fonts	K1-K5	6	CO1-3	Lecture Case Study Demonstration	Practical exercise -Drawing olympic ring logo -Creating a Logo -Computing distance between two points and illustration

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July 24 – 31, 2024 (Day Order 1 - 6)	2	<b>2.2 Selections and Loops</b> Boolean Type, Values, Expressions-If Statements-Case Study- Two Way If Statements- Nested If-Common Errors in Selection Statement- Case Study-Logical Operators-Case Study- Conditional Expressions- Operator Precedence and Associativity- The While Loop-The For Loop	K1-K6	6	CO1-5	Practical exercise -Adding two randomly generated numbers -Guessing birthdays -Finding the Chinese zodiac sign -Determining leap year -Simulating a lottery win -Detecting the location of an object -Guessing Numbers -basic Calculator	<b>Component I</b> – Quiz – Selection and Loops(10 marks)
Aug 1 – 5, 2024 (Day Order 1 - 3)	2	Nested Loops- Minimizing Numerical Errors-Case Study	K1-K6	3	CO1-5	Lecture Case Study	Practical exercise -Multiplication table -gcd - <b>Code Review</b> - Monte Carlo Simulation -Prime Numbers

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Aug 6 – 10, 2024	<b>C.A. Test – I</b>						
Aug 12 – 14, 2024 (Day Order 4-6)	3	<b>3.1 Functions</b> Defining a Function- Calling a Function- Function with or Without Return Values	K1-K6	3	CO1-5	Lecture Demonstration Case Study	-pyramid -decimal to binary, <b>-tri programming-</b> -decimal to hexadecimal -perfect number
Aug 16 – 23, 2024 (Day Order 1-6)	3  2 3	Positional and Keyword Arguments-Passing Argument by Reference- Modularizing The Code- Case Study-The Scope of the Variables-Default Arguments-Returning Multiple Values- Case Study-Function Abstraction- Recursion 2.1 Introduction to Object and Methods <b>3.2 Object and Classes</b> Defining Classes for Objects-Constructing Objects-Accessing the Member of the Objects- Self Parameters- Using Classes	K1-K6	6	CO1-5	Lecture Demonstration Case Study Interactive coding <b>Code review</b> - Print calendar for a month	Practical exercise -area and perimeter -Generating random ASCII characters -Reusable graphic functions -Body Mass Index -Bank Operations -Stopwatch <b>Component II –</b> Code review- Selections, Loops and Functions-(15 marks)

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Aug 27 – Sep 3, 2024 (Day Order 1-6)	3	Hiding Data Field- Immutable Objects Vs Mutable Objects-Class Abstraction and Encapsulation-Case Study <b>3.3 Strings and Special                  Methods</b> The Str Class-Creating Strings-Functions of Strings- Functions for Strings-Index Operator []- The Slicing Operator- Concatenations Operators-In and Not in Operators-Comparing, Iterating and Strings	K1-K6  K1-K5	6	CO1-5	Lecture Demonstration Case Study	Practical exercise -area and circumference of circle with private radius -mutable vs immutable objects -String operations -Palindrome <b>Pair programming -</b> Password strength
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Sep 4 – 11, 2024 (Day Order 1-6)	3	Searching, Converting and Formatting Strings	K1-K6	6	CO1-5	Lecture Demonstration Case Study Group Discussion 2.1- Self Learning GUI programming using tkinter(Self study)	Practical exercise -Calculator using tkinter -A simple GUI form <b>-Pair programming-</b> A basic paintbrush application -tracking the position of mouse click - determine whether all the input numbers cover 1 to 99 -counting the occurrence of each letter -linear search -binary search
	2	<b>2.1 Mathematical Functions, Strings, And Objects</b> Common Python Functions-String and Characters Formatting Numbers and Strings <b>4.1 List Processing</b> List Basics-Case Study- Copying The Lists- Passing Lists to Function- Returning List from Function-Case Study- Searching Lists	K1-K5				
	4						

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Sep 12 - 20, 2024 (Day Order 1-6)	4	Case Study- Multidimensional Lists- Processing Two Dimensional List- Processing Two Dimensional List to Function- Multidimensional Lists	K1-K6	6	CO1-5	Lecture Demonstration Case Study Group Activity	Practical exercise -sum of elements of a matrix using function -Grading a multiple choice test -finding the closest pair of points <b>Code Review -</b> Sudoku program
Sep 23 - 26, 2024 (Day Order 1-4)	5	<b>5.1 Tuples, Sets and Dictionaries</b> Tuples- Sets-Comparing The Performances of Sets and Lists -Dictionaries	K1-K6	4	CO1-5	Lecture Demonstration Case Study Group Discussion	Practical exercise -tuple, sets and dictionaries operations -Sets vs lists -Counting keywords -display non duplicate words <b>Code review -</b> Hangman
Sep 27 – Oct 3, 2024	<b>C.A. Test – II</b>						



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Oct 4 – 5, 2024 (Day 5 & 6)	5	<b>5.2 Files and Exceptional Handling</b> Text Input/Output	K1-K6	2	CO1-5	Lecture Demonstration Case Study	Practical exercise -Writing, reading and appending data in a file
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	File Dialogs-Case Study- Retrieving Data from Web-Exception Handling-Raising Exceptions-Custom Exception Classes	K1-K6	6	CO1-5	Lecture Demonstration Case Study	Practical exercise -Counting the occurrence of each letter in a file -file dialogs -Exception Handling and raising exceptions  <b>Component III -</b> Project Presentation and Viva – 25 marks
Oct 16 - 22, 2024 (Day Order 1 to 6)		Backlogs				Lecture Group Discussion	Discussion Practical exercise
Oct 23 - 24, 2024 (Day Order 1 to 2)	<b>REVISION</b>						

**STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**  
**COURSE PLAN June - November 2024**

**Department** : **COMPUTER SCIENCE**  
**Name/s of the Faculty** : **Ms. Roselin Clara A**  
**Course Title** : **DISCRETE MATHEMATICS FOR COMPUTER SCIENCE**  
**Course Code** : **23CS/PC/DM14**  
**Shift** : **II**

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
<b>CO1</b>	understand mathematical reasoning including induction, recursion and apply mathematical logic to solve problems	K1, K2
<b>CO2</b>	apply logic Sets, Predicates, Propositional logic. Model Graphs, trees and able to determine their properties	K3
<b>CO3</b>	analyze counting techniques to the representation and characterization of relational and functional concepts.	K4
<b>CO4</b>	evaluate counting problems and algorithms performances on finite and discrete Structures	K5
<b>CO5</b>	construct mathematical proofs using case analysis, and mathematical induction. Application of concepts in Discrete Mathematics.	K6

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**Course Title** : DISCRETE MATHEMATICS FOR COMPUTER SCIENCE  
**Course Code** : 23CS/PC/DM14  
**Shift** : II

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day Order 4 - 6)	1	1.1 Sets and Induction Lattices and Boolean Algebras	K1-K3	2	1-2	Presentation	Discussion
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	Principles of Inclusion – Exclusion – Mathematical Induction 1.2 Program Correctness Pseudocode Conventions - An Algorithm to Generate Perfect Squares - Two Algorithms for Computing Square Roots	K1-K3  K1-K5	5	1-2  1-4	Learning by Doing	Problem solving questions
July 5 – 12, 2024 (Day Order 1 - 6)	1	Strong Form of Mathematical Induction - Application: Algorithm to Compute Powers - Application: Finding Factorizations - Application: Binary Search	K1-K5	5	1-4	Learning by Doing	Component 1 for 25 marks with problems from unit 1.

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<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
July 15 – 23, 2024 (Day Order 1 - 6)	2	2.1 Formal Logic Truth and Logical Truth - Tautologies - Substitutions into Tautologies - Logically Valid Inferences - Combinatorial Networks - Substituting Equivalent Sub formulas - Simplifying Negations	K1-K6	5	1-5	Learning by Doing	Quiz
July 24 – 31, 2024 (Day Order 1 - 6)	2	2.2 Normal Forms Disjunctive Normal Form - Application: DNF and Combinatorial Networks – Conjunctive Normal Form - Application: CNF and Combinatorial Networks - Testing Satisfiability and Validity - The Famous $P \neq NP$ Conjecture - Resolution Proofs: Automating Logic	K1-K6	5	1-5	Case Analysis	Presentation

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Aug 1 – 5, 2024 (Day Order 1 - 3)	3	3.1 Predicates and Quantification Predicates - Quantification - Restricted Quantification - Nested Quantifiers –	K1-K4	3	1-3	Learning by Doing	Problem solving questions
Aug 6 – 10, 2024	<b>C.A. Test – I</b>						
Aug 12 – 14, 2024 (Day Order 4-6)	3	Negation and Quantification - Quantification with Conjunction and Disjunction	K1-K4	2	1-3	Learning by Doing	Problem solving questions
Aug 16 – 23, 2024 (Day Order 1-6)	3	Application: Loop Invariant Assertions 3.2 Relations Binary Relations - n-ary Relations - Special Types of Relations - Reflexive and Irreflexive Relations	K1-K6	5	1-3 1-5	Presentation	Component 2 for 25 marks on case study presentation relating mathematics to computer science

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Aug 27 – Sep 3, 2024 (Day Order 1-6)	3	Symmetric and Antisymmetric Relations - Transitive Relations - Reflexive, Symmetric, and Transitive Closures - Application: Finding a Minimal Element	K1-K6	5	1-5	Learning by Doing	Problem solving questions
Sep 4 – 11, 2024 (Day Order 1-6)	4	4.1 The Pigeon-Hole Principle k to 1 Functions - Pigeon-Hole Principle - Application: Decimal Expansion of Rational Numbers - Problems with Divisors and Schedules	K1-K6	5	1-5	Presentation	Discussion
Sep 12 - 20, 2024 (Day Order 1-6)	4	Two Combinatorial Results 4.2 Analysis of Algorithms* Algorithms - Complexity Analysis - Comparing Growth Rate of functions	K1-K6	5	1-5	Case Studies	Discussion

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Sep 23 - 26, 2024 (Day Order 1-4)	4, 5	Asymptotic notations - Complexity of Programs 5.1 Graph Theory Introduction to Graph Theory – Definitions - Subgraphs - Paths and Cycles	K1-K6	4	1-5	Learning by Doing	Problem solving questions
Sep 27 – Oct 3, 2024	<b>C.A. Test – II</b>						
Oct 4 – 5, 2024 (Day 5 & 6)	5	Euler Paths and Circuits - Hamiltonian Paths and Circuits	K1-K6	1	1-5	Learning by Doing	Problem solving questions
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	Applications of Hamiltonian Circuits - Graph Isomorphism - Representation of Graphs - Adjacency Matrix – Adjacency Lists - Connected Graphs - The Relation CONN - Finding Connected Components - Reachability matrix – Planar-Graphs - Definitions - Applications - Euler Formula - Kuratowski's Theorem - Graph Colouring - Terminologies - The Four colour Theorem - Applications of Graph Colouring	K1-K6	5	1-5	Case Studies	Component 3 for 10 marks with MCQs from 3,4 units to test their understanding.

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<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	5.2 Trees Definition of Trees - Characterization of Trees - Application: Decision Trees – Directed Graphs - Basic Definitions - Directed Trails, Paths, Circuits, and Cycles - Directed Graph Isomorphism	K1-K6  K1-K3	5	1-5  1-3	Presentation	Discussion
Oct 23 - 24, 2024 (Day Order 1 to 2)	<b>REVISION</b>						



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**Department** : Computer Science  
**Name/s of the Faculty** : Ms. J. Birunda Antoinette Mary  
**Course Title** : Software Engineering  
**Course Code** : 23CS/PC/SE14  
**Shift** : II

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
<b>CO1</b>	Explain the software engineering principles and techniques	K1,K2
<b>CO2</b>	Choose an appropriate software life cycle model for a given problem	K3
<b>CO3</b>	Analyse and design complex systems and Ability to develop, maintain and evaluate large-scale software systems	K4
<b>CO4</b>	Assess the efficiency, reliability, robustness and develop cost- effective software solutions	K5
<b>CO5</b>	Discuss about the new modeling, design, management techniques used for a future product	K6

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**Course Title** : Software Engineering  
**Course Code** : 23CS/PC/SE14  
**Shift** : II

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Jun 24 – 26, 2024 (Day Order 4 - 6)	1	1.1 Software and Software Engineering: Nature of Software - Defining Software Engineering- Software Process - Process, Activities, Work Product - Process Framework - Categories of Activities (Framework, Umbrella) Software Process	K1-K4	3	1-3	Lecture, Analogies	Discussion
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	1.2 Process Models SDLC - Waterfall Model - Prototyping - Agile Philosophy - Agility, Agility and Cost Change, Agile Process - Agility Principles - Scrum - Test driven development - continuous integration – Impact of Process on End Product - Process Assessment and Improvement	K1-K4	5	1-3	Lecture with Examples.	Questioning

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**Course Title** : Software Engineering  
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**Shift** : II

<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
July 5 – 12, 2024 (Day Order 1 - 6)	1 & 2	1.3 Software Engineering Principles: Planning - Separation of Concerns - Modularity - Modeling - Abstraction - Anticipation of change - Reusability - Incrementality - Measurement – Tools 2.1 Requirements Gathering: Requirements Engineering Tasks - Software Requirements Specification - Types of Requirements (Normal, Expected) - Traceability Matrix -Agile Requirements Elicitation (User Stories) - Agile Requirements Engineering	K1-K4  K1-K6	2  3	1-3  1-5	Scenarios provided to brainstorm.  Identifying the requirements for a given problem.	Questioning
July 15 – 23, 2024 (Day Order 1 - 6)	2	2.2 Modeling: Significance of requirement analysis - Arlow and Neustadt rules of thumb - application domain analysis - Writing Use Cases - Use Case Diagram - Activity Diagram - Swimlane Diagram - Identifying classes	K1-K6	5	1-5	Lecture & Demo using a tool  Model Use case & class diagrams for a given problem	Practical on UML diagrams

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
July 24 – 31, 2024 (Day Order 1 - 6)	2	Attributes – Operations - associations and dependencies - Class diagram - packaging classes - State Diagram - Sequence Diagram	K1-K6	5	1-5	Lecture & Demo using tool	Comp1 - 25 marks Write use cases, Draw UML diagrams.
Aug 1 – 5, 2024 (Day Order 1 - 3)	3	3.1 Software Designing : Design Concepts (Abstraction, Architecture, Patterns, Separation of Concerns, Modularity, Information Hiding, Functional Dependence, Refinement, Aspects, Refactoring)	K1-K6	2	1-5	Lecture with Examples.	Quiz
Aug 6 – 10, 2024	<b>C.A. Test - I</b>						
Aug 12 – 14, 2024 (Day Order 4-6)	3	3.2 Basic Design Principles: Open Closed - Liskov Substitution - Dependency Inversion - Interface Segregation - Release Reuse Equivalency- Common Closure - Common Reuse	K1-K6	3	1-5	Lecture with examples.	Discussion
Aug 16 – 23, 2024 (Day Order 1-6)	3	3.3 Software Quality and Assurance McCall's quality factors - ISO 9126 Quality factors - Cost of Quality - Defect - Defect Amplification and removal - Reviews – Informal, Formal Technical Reviews - Inspection - Walkthroughs - Audits – Testing	K1-K6	5	1-5	Lecture  Review Coding standards using tool	Submission of review

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Aug 27 – Sep 3, 2024 (Day Order 1-6)	4	4.1 Software Testing Levels of Testing - Unit Testing, Integration Testing, Validation Testing, System Testing - Test Cases - Test Case Template -Types of Testing - White Box, Basis Path Testing , Control Structure Testing	K1-K6	5	1-5	Lecture  Design test cases for a given application as a team of 3 members	Comp2- 25 marks  Create manual test cases for the problem
Sep 4 – 11, 2024 (Day Order 1-6)	4	4.2 Software Configuration Management: Need - - Baselines - Software Configuration Items - SCM Repository - SCM Process	K1-K6	5	1-5	Lecture	Questioning
Sep 12 - 20, 2024 (Day Order 1-6)	4	4.3 Metrics Terms (Metrics, Measurement, Indicators) - Function Points - Deriving Function points - Metrics - CK Metrics - Defects per KLOC - FP per Person-Month - McCabe Cyclomatic Complexity - code coverage	K1-K6	5	1-5	Lecture	Calculate cyclomatic complexity
Sep 23 - 26, 2024 (Day Order 1-4)	5	5.1 Software Project Estimation: Software sizing- LOC Based Estimation - FP based - estimation - COCOMO Model II - Estimation for WebApp Projects	K1-K6	3	1-5	Lecture	Discussion
Sep 27 – Oct 3, 2024	<b>C.A. Test - II</b>						

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Oct 4 – 5, 2024 (Day 5 & 6)	5	5.2 Project Management and Scheduling: Training plan - Defect prevention meeting - Root causes for delays - Principles (Compartmentalization, Interdependence, Effort Validation, Time Allocation, Responsibilities, Outcomes, Milestones)	K1-K6	2	1-5	Lecture	Questioning
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	Relationship between People and Effort - Effort Distribution (40-20-40 rule) - Scheduling Tools and Techniques (Time- Line charts, Tracking the schedule) 5.3 Risk Management Term - Proactive Vs Reactive Risk Strategies - Risk Identification - Risk Projection (Risk Table, Assessing Risk Impact)	K1-K6	5	1-5	Lecture  Case Study: Identify risks and probability of occurrence for a project.	Create a risk table.
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	Risk Mitigation, Monitoring, Management - RMMM Plan	K1-K6	5	1-5	Lecture  Identify components of an RMMM plan and its purpose	Discussion
Oct 23 - 24, 2024 (Day Order 1 to 2)	<b>REVISION</b>						

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**Department** : Computer Science  
**Name/s of the Faculty** : Ms. Blessy Boaz  
**Course Title** : Operating Systems: Concepts and Applications  
**Course Code** : 23CS/PC/OC14  
**Shift** : II

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
<b>CO1</b>	explain the fundamental concepts and security of operating systems	K1, K2
<b>CO2</b>	apply the various algorithms, methods and security measures to each OS components	K3
<b>CO3</b>	analyse the algorithms, methods, security and the state of the system in various time periods	K4
<b>CO4</b>	evaluate the performance of the algorithms, file and memory management techniques	K5
<b>CO5</b>	create solutions to ensure synchronization for real time applications	K6

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**COURSE PLAN June - November 2024**

**Department** : Computer Science  
**Name/s of the Faculty** : Ms. Blessy Boaz  
**Course Title** : Operating Systems: Concepts and Applications  
**Course Code** : 23CS/PC/OC14  
**Shift** II

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day Order 4 - 6)	1	<b>1.1 Introduction to Operating System</b> Introduction to OS - Structure, Operations, Protection and Security, Kernel Data Structures, Computing Environments, Services, System Calls and its types,	K1, K2	3	CO1	Discussion & Lecture	Quiz
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	System Programs, OS Design and Implementation OS Debugging Operating, System Generation, System Boot <b>1.2 UNIX Operating System</b> History of UNIX, Shell, UNIX File System Structure <b>1.3 Basic UNIX Commands</b> Commands for files and directories cd, cp, mv, rm, mkdir, more, less,	K1, K2       K1-K4	6	CO1      CO1-3	Lecture and Demo	Practical Exercises
July 5 – 12, 2024 (Day Order 1 - 6)	1, 2	creating and viewing files, using cat, date, who, pwd - filter commands –head tail, cut, paste, grep – regular expression – sort <b>2.1 Process Management</b> Process - Concept, Process Control Block, Process operations, Scheduling Algorithms - Short term and long	K1-K4       K1, K2	6	CO1-3      CO1	Lecture and Demo	Experiments



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July 15 – 23, 2024 (Day Order 1 - 6)	2	<b>2.2 CPU Scheduling</b> Scheduling Criteria – Scheduling Algorithms: FCFS, SJF, Priority and Round Robin Scheduling <b>2.3 Process Synchronization and Deadlocks</b> The Critical -section Problem – Petersons solution – Mutex locks – Semaphores – Monitors, Deadlock Prevention and Avoidance, Deadlock Detection and Deadlock Recovery	K1-K5  K1-K6	6	CO1-4  CO1-5	Lecture Case studies	Solving problem  Component-I Case Study on Process Management (25 Marks)
July 24 – 31, 2024 (Day Order 1 - 6)	2	<b>2.4 Process Utilities</b> sh process, Parents and children, Process status, System process, Mechanism of process creation, Internal and external commands, running jobs in background, KILL, NICE, Job control, at and batch, cron - CaseStudy on Processes in LINUX	K1-K6	6	CO1-5	Lecture, Experiments and Story telling	Practical Exercises
Aug 1 – 5, 2024 (Day Order 1 - 3)	3	<b>3.1 File Organisation</b> File organisation and Access methods - Logical and Physical File structure– File Allocation methods, - Linked and Index Allocation	K1-K5	3	CO1-4	Lecture and presentation	Discussion
Aug 6 – 10, 2024	<b>C.A. Test – I</b>						

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Aug 12 – 14, 2024 (Day Order 4-6)	3	File Protection and Security - Directory structure - Single level, two level, Tree structure - Free Space Management – Allocation Methods - Efficiency and Performance– Recovery –FAT32 and NTFS <b>3.2 File System</b> File Access Permission – chmod, chown, chgrp – File Comparisons - View Files – Listing files with attributes – Wildcards - Translating Characters - Links and its types	K1-K5  K1-K6	3	CO1-4  CO1-5	Lecture and Demo	Case Studies and Practical exercises
Aug 16 – 23, 2024 (Day Order 1-6)	3	The File System – Partitions, File Systems, Kernel Accesses – Mounting – umask, ulimit - I/O redirection – Pipes - Case Study on LINUX File System	K1-K6	6	CO1-5	Lecture, presentation and Demo	Case Study
Aug 27 – Sep 3, 2024 (Day Order 1-6)	4	<b>4.1 Memory Management</b> Memory Management Techniques, Single Partition Allocation, Multiple Partition Allocation – Swapping -Paging and Segmentation Segmented -Paged Memory Management Techniques - Logical and Physical Address space – Address Mapping - Demand paging -Virtual memory, protection and address mapping hardware, Page fault, Page replacement and Page removal algorithms	K1-K5	6	CO1-4	Lecture, Simulation and Model Building	Discussion

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Sep 4 – 11, 2024 (Day Order 1-6)	4	<b>4.2 Device Management</b> Classification of device according to speed, Disk structure - Disk scheduling – FCFS scheduling, SSTF scheduling - Access method and storage capacity <b>4.3 Disk Utilities</b> Disk usage, disk free, dd, Backups -cpio, tar, System calls for file management, directory management - Case Study on Memory Management in LINUX	K1-K5  K1-K6	6	CO1-4  CO1-5	Lecture and Demo	Practical Exercises  Component-II Practical Test on LINUX Commands (25 marks)
Sep 12 - 20, 2024 (Day Order 1-6)	5	<b>5.1 Security</b> The Security Environment – Operating System Security – Controlling Access to resources – Formal models of Secure systems	K1-K4	6	CO1-3	Group Discussion	Brain Storming
Sep 23 - 26, 2024 (Day Order 1-4)	5	Basics of cryptography –Authentication – Exploiting Software – Insider Attacks – Malware – Defenses	K1-K4	4	CO1-3	Lecture and Discussion	Quiz
Sep 27 – Oct 3, 2024	<b>C.A. Test – II</b>						
Oct 4 – 5, 2024 (Day 5 & 6)	5	<b>5.2 Virtualization and the Cloud</b> History – Requirements for virtualization – Type 1 and Type 2 Hypervisors	K1-K4	2	CO1-3	Lecture and Group Discussion	Q&A

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<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	Techniques for efficient virtualization – Memory virtualization –I/O Virtualization – Virtual Appliances – Virtual machines on multicore CPUs	K1-K4	6	CO1-3	Lecture and Discussion	Quiz
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	Clouds: Clouds as service – Virtual machine migration –check pointing -Case Study on Security in LINUX	K1-K4	6	CO1-3	Lecture and Case study	Discussion
Oct 23 - 24, 2024 (Day Order 1 to 2)	<b>REVISION</b>						

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**Department** : Computer Science  
**Name/s of the Faculty** : Dr. K. C. Sharmili  
**Course Title** : UI, UX and Design Thinking  
**Course Code** : 23CS/PE/XI15  
**Shift** : II

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
<b>CO1</b>	Recall the core concepts of UI, UX and demonstrate their need in designing a web application using front-end development technologies	K1, K2
<b>CO2</b>	Apply the knowledge and build web applications using HTML5, CSS, JavaScript, Bootstrap	K3
<b>CO3</b>	Analyse between different users, user behaviors and their role in front-end application design	K4
<b>CO4</b>	Evaluate the design using wire framing and prototyping to build user centric front-end applications	K5
<b>CO5</b>	Design and develop the front-end of a web application with all the learnt concepts	K6

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**Shift** II

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day Order 4 - 6)	1	<b>1.1 UX and Design Process:</b> What is UX? - UX Design Process - Discovery and Planning	K1-K4	3	CO1-3	Lecture and Presentation	Discussion
Jun 27 – July 4, 2024 (Day Order 1 - 6)	4	<b>4.1 HTML5 and CSS3</b> HTML Elements – Structural/Semantic, Phrasing, Table, Embedded	K1-K6	6	CO1-5	Project Designs	Practical Exercise (creating a simple web design using table)
July 5 – 12, 2024 (Day Order 1 - 6)	4	Form - CSS Selectors -Positioning Content– Text Styles - Borders and Backgrounds –Styling Tables – Flexbox	K1-K6	6	CO1-5	Project Designs	Practical Exercise (Enhancing the design by applying styles)
July 15 – 23, 2024 (Day Order 1 - 6)	1,4	Animation and Transforms <b>Unit 1:</b> The UX Strategy - UX Research Stages - UX Analysis, Design, Production	K1-K6	6	CO1-5	Lecture and Presentation	Questioning
July 24 – 31, 2024 (Day Order 1 - 6)	1	<b>1.2 User Behavior and User Research</b> Basics - Gestalt Theory - Psychology in UX – User Research, Benefits of User Research – Getting to know your users – User Personas	K1-K4	6	CO1-3	Group Discussion	<b>Component 1 (unit 1,4) – Theory (20 marks)</b> Selecting any site and identifying the UX strategy applied with its pros and cons and UI elements used

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Aug 1 – 5, 2024 (Day Order 1 - 3)	5	<b>Unit 5:</b> <b>5.1 JavaScript</b> JavaScript Essentials- Browser Environment – Window Object – DOM Elements – Constraint Validation API - JQuery	K1-K6	3	CO1-5	Lecture and Presentation	Practical Exercise (Making the design interactive with JavaScript)
Aug 6 – 10, 2024	<b>C.A. Test – I</b>						
Aug 12 – 14, 2024 (Day Order 4-6)	5	Dynamic Styling – Events – TypeScript – Installing TypeScript, Benefits, Building a TypeScript file	K1-K6	3	CO1-5	Lecture and Presentation	Practical Exercise (Add events to the design)
Aug 16 – 23, 2024 (Day Order 1-6)	5	<b>5.2 Bootstrap Framework</b> Installation - Responsive Grid System - Bootstrap's Style Standard - Responsive CSS - Responsive Development with Browser devTools – Z dimension	K1-K6	6	CO1-5	Collaborate in Technical Forums such as 'Github'	Practical Exercise (Make the site to be responsive)
Aug 27 – Sep 3, 2024 (Day Order 1-6)	5	Transform – Transition – Animation – Flexbox – Responsive Website clone	K1-K6	6	CO1-5	Collaborate in Technical Forums such as 'Github'	Practical Exercise (Add animation to the site)

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Sep 4 – 11, 2024 (Day Order 1-6)	2	<b>2.1 Designing Behavior</b> Five actors/Preconditions for Users to Take Actions – Models of Behavior Change – Behavioral Approach for Product Design	K1-K4	6	CO1-3	Group Discussion	Discussion
Sep 12 - 20, 2024 (Day Order 1-6)	2	<b>2.2 Visual Design Principles and Processes</b> Basics of Visual Design - Design Principles Visual Design Tools	K1-K4	6	CO1-3	Lecture and Presentation	Discussion
Sep 23 - 26, 2024 (Day Order 1-4)	3	<b>3.1 Wireframes and Prototyping</b> Wireframe - Creating Wireframes, Types, Tools - Prototyping - Methods, Creating Prototypes- Tools	K1-K6	4	CO1-5	Collaborate in Technical Forums such as 'Github'	<b>Component 2 – (Unit 1 – 5) (30 marks)</b> Miniproject (UX responsive site with UI design tools)
Sep 27 – Oct 3, 2024	<b>C.A. Test – II</b>						
Oct 4 – 5, 2024 (Day 5 & 6)	3	<b>3.2 UI Design and Implementation</b> User Interface Design - UI design Tools-	K1-K6	2	CO1-5	Lecture and Presentation	Discussion
Oct 7 - 15, 2024 (Day Order 1 to 6)	3	Post-launching UX Activities – User Feedback – Testing	K1-K6	6	CO1-5	Lecture and Presentation	Discussion



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<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Oct 16 - 22, 2024 (Day Order 1 to 6)	3	Tracking and Recording – Creating and Analyzing Conversion funnels	K1-K6	5	CO1-5	Lecture and Presentation	Discussion
Oct 23 - 24, 2024 (Day Order 1 to 2)	<b>REVISION</b>						

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**Course Title** : Cyber Security  
**Course Code** : 23CS/PE/C15  
**Shift** : II

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
<b>CO1</b>	Understand the fundamentals of cybercrimes and computer forensics	K1, K2
<b>CO2</b>	Apply the preventive measures to safeguard from cyber crimes	K3
<b>CO3</b>	Analyze the various methodologies involved in attacks	K4
<b>CO4</b>	Evaluate the strategies used in cybercrime and cyber forensics	K5
<b>CO5</b>	Adapt policies to secure data	K6

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**Shift** II

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day Order 4 - 6)	1	<b>1.1 Introduction to Cybercrime</b> Introduction, Cybercrime: Definition and Origins of the Word, Cybercrime and Information Security, who are Cybercriminals?	K1-K4	3	CO1-3	Brainstorming	Discussion
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	Classifications of Cybercrimes, Cybercrime The Legal Perspectives, Cybercrimes: An Indian Perspective, Cybercrime and the Indian ITA 2000, A Global Perspective on Cybercrimes	K1-K4	6	CO1-3	Brainstorming	Discussion
July 5 – 12, 2024 (Day Order 1 - 6)	1	<b>1.2 Cyber Offenses: How Criminals Plan Them?</b> Introduction, How Criminals Plan the Attacks, Social Engineering Cyber stalking, Cyber café and Cybercrime, Botnets, the Fuel for Cybercrime, Attack Vector, Security in Cloud	K1-K4	6	CO1-3	Storytelling	Questioning

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
July 15 – 23, 2024 (Day Order 1 - 6)	2	<b>2.1 Cybercrime: Mobile and Wireless Devices</b> Introduction, Proliferation of Mobile and Wireless Devices, Trends in Mobility, Credit Card Frauds in Mobile and Wireless Computing Era, Security Challenges Posed by Mobile Device Registry, Settings for Mobile Devices, Authentication Service Security, Attacks on Mobile/Cell Phones	K1-K4	6	CO1-3	Group Discussion	Questioning
July 24 – 31, 2024 (Day Order 1 - 6)	2	Mobile Devices: Security Implications for Organizations, Organizational Measures for Handling Mobile, Organizational Security Policies and Measures in Mobile Computing Era, Laptops	K1-K4	6	CO1-3	Group Discussion	<b>Component 1 (Unit 1,2) (25 marks)</b> - Analysing the Cybercrimes and security & privacy measures in Social media platforms using open source security tools

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Aug 1 – 5, 2024 (Day Order 1 - 3)	3	<b>3.1 Tools and Methods Used in Cybercrime</b> Introduction, Proxy Servers and Anonymizers, Phishing, Identity Theft (ID Theft), Password Cracking	K1-K6	3	CO1-5	Case Study	Presentation
Aug 6 – 10, 2024	<b>C.A. Test – I</b>						
Aug 12 – 14, 2024 (Day Order 4-6)	3	Keyloggers and Spywares, Virus and Worms, Trojan Horses and Backdoors, Steganography	K1-K6	3	CO1-5	Case Study	Presentation
Aug 16 – 23, 2024 (Day Order 1-6)	3	DoS and DDoS Attacks, SQL Injection, Buffer Overflow, Attacks on Wireless Networks	K1-K6	6	CO1-5	Case Study	Presentation
Aug 27 – Sep 3, 2024 (Day Order 1-6)	3	Steganography, DoS and DDoS Attacks, SQL Injection, Buffer Overflow, Attacks on Wireless Networks	K1-K6	6	CO1-5	Case Study	Presentation

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Sep 4 – 11, 2024 (Day Order 1-6)	4	<b>4.1 Cybercrimes and Cyber security: The Legal Perspectives</b> Introduction, Cybercrime and the Legal Landscape around the World, Why Do We Need Cyber laws - The Indian Context, The Indian IT Act	K1-K6	6	CO1-5	Group Discussion	Discussion
Sep 12 - 20, 2024 (Day Order 1-6)	4	Challenges to Indian Law and Cybercrime Scenario in India, Consequences of Not Addressing the Weakness in Information Technology Act, Digital Signatures and the Indian IT Act, Amendments to the Indian IT Act, Cybercrime and Punishment,	K1-K6	6	CO1-5	Group Discussion	Discussion
Sep 23 - 26, 2024 (Day Order 1-4)	4	Cyber law, Technology and Students with respect to Indian Scenario	K1-K6	4	CO1-5	Group Discussion	Questioning
Sep 27 – Oct 3, 2024	<b>C.A. Test – II</b>						

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Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Oct 4 – 5, 2024 (Day 5 & 6)	5	<b>5.1 Computer Forensics Understanding Computer Forensics</b> · Introduction, Historical Background of Cyber forensics	K1-K6	2	CO1-5	Gaming	Roleplay
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	Digital Forensics Science, The Need for Computer Forensics, Cyber forensics and Digital Evidence, Forensics Analysis of E-Mail Digital Forensics Life Cycle, Chain of Custody Concept, Network Forensics, Approaching a Computer Forensics Investigation, Computer Forensics and Steganography, Relevance of the OSI 7 Layer Model to Computer Forensics.	K1-K6	6	CO1-5	Case Analysis	<b>Component 2 (Unit 4,5) (25 marks)</b> – Presentation of Real Case Analysis with the cybercrime laws and punishments given

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<b>Week</b>	<b>Unit No.</b>	<b>Content</b>	<b>Cognitive Level</b>	<b>Teaching Hours</b>	<b>COs</b>	<b>Teaching Learning Methodology</b>	<b>Assessment Methods</b>
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	Forensics and Social Networking Sites: The Security/Privacy Threats, Computer Forensics from Compliance Perspective, Challenges in Computer Forensics · Special Tools and Techniques, Forensics Auditing Antiforensics	K1-K6	6	CO1-5	Case Analysis	Seminar
Oct 23 - 24, 2024 (Day Order 1 to 2)	<b>REVISION</b>						