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A.E. KALSEKAR DEGREE COLLEGE

KAUSA, MUMBRA
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NAME OF THE PAPER: **Python Programming** SEM: **III**

SYLLABUS (UNIT WISE)	OBJECTIVES	OUTCOME
UNIT - I	▪ Train students for basic writing and running Python scripts ▪ Teach students advanced features such as File operations, regular expressions, working with binary data and using the extensive functionality of Python programming with GUI interface.	Understanding basic fundamentals of programming using Python.
UNIT -II		Recognize and construct common programming idioms: variables, loop, branch, subroutine, strings and input/output.
UNIT III		Define and demonstrate the use of the built-in data structures 'list' and 'dictionary'.
UNIT IV		Study of object oriented concepts using Python.
UNIT -V		Creation of GUI, adding Widgets and connecting to database using Python.

NAME OF THE PAPER: **: Data Structures** SEM: **III**

SYLLABUS (UNIT WISE)	OBJECTIVES	OUTCOME
UNIT - I	▪ Gain understanding of the basic concepts of data structures and algorithms and searching and sorting techniques. ▪ Understand basic concepts of stacks, queues, lists, trees and graphs. ▪ Write algorithms and solve problems with the help of fundamental data structures.	Demonstrate advantages and disadvantages of specific algorithms and data structure. Understanding array and its representation in memory.
UNIT - II		Define basic static and dynamic data structures and relevant standard algorithms for them:dynamically linked lists , trees, graphs, heap, priority queue, hash tables, sorting algorithms, min-max algorithm
UNIT -III		Define basic data structures and relevant standard algorithms for them: Stack and Queue.

UNIT - IV		Define basic data structures and relevant standard algorithms for them: Trees. Sorting Algorithms.
UNIT - V		Define basic data structures and relevant standard algorithms for them: Hash tables and graph.

NAME OF THE PAPER: **Computer Networks** SEM: **III**

SYLLABUS (UNIT WISE)	OBJECTIVES	OUTCOME
UNIT - I	Acquire learning of concepts and fundamentals of data communication and computer networks organization and implementation, obtaining a theoretical understanding of data communication and computer networks, and gaining practical experience in installation, monitoring, and troubleshooting of current LAN systems. The course is further aimed at introducing students to practical implementation of different routing protocols.	Understanding of layered communication in network. OSI network model; Differentiate between analog and digital communication
UNIT-II		Utilization of bandwidth; various communication media
UNIT -III		Understand different types of switching
UNIT - IV		Study of error detection and correction.
UNIT - V		Understanding of data link control and media access control
		Study of different types of wireless LANs

		Understanding various responsibilities of network layer, Unicast routing protocols.
		Understanding responsibilities of transport layer protocol; Using standard client server protocols.

NAME OF THE PAPER: **Database Management** SEM: **III**

SYLLABUS (UNIT WISE)	OBJECTIVES	OUTCOME
UNIT - I	The Objective of the course is to introduce students to database management systems, with an emphasis on organizing, maintaining and retrieving information from a DBMS	To study the physical and logical database designs, database modeling, relational, hierarchical, and network models, ER Models.
UNIT -II		To understand the concept of Relational Database Model like Keys, Integrity Rules, and Normalization.
UNIT III		Recall Relational Algebra concepts, and use it to translate queries to Relational Algebra.
UNIT IV		To develop an understanding of serializability, concurrency control in Transaction Management along with database Recovery Management.
UNIT -V		To understand the application of different concepts in SQL and PL/SQL like, aggregate functions, joins, sub queries, cursors, procedures and functions, packages and triggers etc.

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NAME OF THE PAPER: **Applied Mathematics** SEM: **III**

SYLLABUS (UNIT WISE)	OBJECTIVES	OUTCOME
UNIT - I	The Objective of the course is to enable students to understand main concepts of calculus, derivatives and integrals.	Provides understanding to work with matrices and performing various transformations on matrices. Introduction to perform basic algebraic manipulation with complex numbers.
UNIT -II		Describes basic definitions and terminology with differential equations and their solutions.
UNIT -III		Solving linear differential equations with constant coefficients and unit step functions using Laplace Transform.
UNIT - IV		Understanding computation of double and triple integrals.
UNIT - V		Using Beta and Gamma functions and error functions.

NAME OF THE PAPER: **Software Engineering** SEM: **II**

SYLLABUS (UNIT WISE)	OBJECTIVES	OUTCOME
UNIT - I	▪ To learn the concepts and methods required for the construction of a large scale software system.	Students will gain a broad understanding of the discipline of software engineering and its application to the development and management of software systems.
UNIT - II	▪ To develop a broad understanding of the discipline of software engineering.	General understanding of various process models like, Iterative, Prototyping, Rapid Application Development, Rational Unified Process, Agile Method of development.
UNIT -III	▪ To gain the knowledge of techniques for the analysis, design and cost estimation of software	To develop understanding of different software systems like, Socio-technical and Critical systems.

UNIT - IV		Importance of requirement engineering process in developing SRS and understanding of various system models.
UNIT - V		Understanding of Architectural Design and User Interface Design concepts. To understand the role of Project Management in planning, scheduling, risk management and Quality Management in understanding industry wide standards.

NAME OF THE PAPER: **Computer Graphics and Animation** SEM: **II**

SYLLABUS (UNIT WISE)	OBJECTIVES	OUTCOME
UNIT - I	▪ To provide an extensive introduction about computer graphics system, algorithms and transformation techniques ▪ To make students understand the clipping and viewing techniques along with wireframe models and shading techniques 10 ▪ To be able to discuss the application of computer graphics in the area of visualization, games and business applications. ▪ Enable students understand the basic pipeline of graphics and implement various algorithms to scan convert the basic geometric shapes, fill shapes with color, clipping and transformation	Introduction to computer graphics and algorithms to understand basic line drawing, circle and Ellipse drawing
UNIT - II		Understanding of 2 dimensional (2D) and 3 dimensional (3D) transformations. Understanding of giving different effects to object like moving object on screen, scaling, reflection , rotation etc
UNIT -III		Introduction to create interactive computer graphics. Viewing in 3D. Knowledge of color and light theory and how to apply it
UNIT - IV		Understanding of algorithms which helps in taking decision which part of graphics object to be visible. Plane curves and surfaces representation.
UNIT - V		Introduction to computer animation, Image manipulation and storage.

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NAME OF THE PAPER: **Core Java** SEM: **II**

SYLLABUS (UNIT WISE)	OBJECTIVES	OUTCOME
UNIT - I	▪ Understand fundamentals of programming such as variables, conditional and iterative execution, methods, etc. ▪ Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc. ▪ Be aware of the important topics and principles of software development. ▪ Have the ability to write a computer program to solve specified problems. ▪ Be able to use the Java SDK environment to create, debug and run simple Java program	Introduction to Core Java: JVM, identifiers, Keywords, data types etc
UNIT - II		Understanding of different control flow statements: If-else, Loops Switch-case. Introduction to the concept of classes
UNIT -III		Understanding of deriving properties of one class into another using different types of inheritance
UNIT - IV		Understanding of Enumeration, Arrays, Multithreading, Exceptions and byte streams
UNIT - V		Describes designing of GUI and how to handle events using AWT components

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NAME OF THE PAPER: **Introduction To Embedded Systems** SEM: **II**

SYLLABUS (UNIT WISE)	OBJECTIVES	OUTCOME
UNIT - I	▪ Gain knowledge about the basic functions of embedded systems. ▪ Learn different components of embedded systems. ▪ Learn detailed description of the life-cycle for designing multi-objective and multi-discipline embedded systems ▪ Design and develop embedded systems with 8051 microcontrollers and embedded C language.	Understanding basic idea behind embedded system and to study various circuit elements which can act as core of embedded system.
UNIT -II		Study of different types of Embedded systems, embedded hardware and peripheral devices.
UNIT -III		Designing and programming embedded system using 8051 microcontroller
UNIT - IV		Study of real time operating system.
UNIT - V		Understanding life cycle of an embedded product

NAME OF THE PAPER: **Computer Oriented Statistical Techniques** SEM: **II**

SYLLABUS (UNIT WISE)	OBJECTIVES	OUTCOME
UNIT - I	▪ Measures of central tendencies with the help of R programming. ▪ Moments, skewness, kurtosis and importing data in R with the help of Excel/CSV file. ▪ Curve Fitting and Correlation Theory and Small Sampling Theory. ▪ Statistical Estimation with the help of hypothesis.	To Learn techniques to calculate the measures of central tendency and different measures of dispersion
UNIT - II		To gain insight into consequences of plan by probability techniques and processing samples using sampling techniques
UNIT -III		Drawing valid conclusion using estimation theory and proper decision using decision theory
UNIT - IV		To measure experimental result based on hypothesis using chi square techniques
UNIT - V		To learn techniques to correlate the relationship between various variables

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Course Number: USIT 4P1 **Course Name: Core Java Practical**

CO1	Implementation of all core java concepts using JDK1.8

Course Number: USIT 4P2 **Course Name: Introduction to Embedded Systems Practical**

CO1	Building a reprogrammable embedded computer using 8051 microcontroller.
CO2	Burn a executable program image into program memory of 8051.
CO3	Implement a delay routine using 8051 timer registers
CO4	To use serial and parallel communication ports of 8051 microcontroller.
CO5	Use Digital to converter to generate waveforms using microcontroller

Course Number: USIT 4P3 **Course Name: Computer Oriented Statistical TechniquesPractical**

CO1	Learning the basic programming concepts and methods of R software
CO2	Gaining knowledge on Implementation of various statistical techniques using R tool

Course Number: USIT 4P4 **Course Name: Software Engineering Practical**

CO1	Hands on to StarUML - a complete solution to system modeling using several types of diagrams - Use Case Diagrams, Class Diagrams, Component Diagram, Sequence Diagram, Activity Diagram etc.

Course Number: USIT 4P5 **Course Name: Computer Graphics and Animation Practical**

CO1	Drawing line,circle,rectangle, ellipse and half ellipse in C, C++ or python
CO2	Developing programs for different algorithms like DDA, Bresenham's, midpoint circle drawing, midpoint ellipse drawing, Clipping and Fill algorithms.
CO3	Implementing 2D scaling and translation
CO4	Performing animation programs