

- understand key concepts of probability including discrete and random variables, probability distribution. will learn general properties of joint marginal and conditional distribution, expectations, moments and variant which help to analyze these distributions.
- be able to define and explain different popular distribution (normal, binomial, poisson). Be able to understand functions of random variables and random vectors with their linear transformation, correlation, regression, central limit theorem which are relevant to data analysis.
- be familiar with markov process, correlation functions and power spectral density and understand basic concepts of queuing theory and some important queuing models.

Mathe matics IV	Program Outcomes												Program Specific Outcomes			
CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3	PSO4
CO 1	2	1											2		1	
CO 2	2	1											2		1	
CO 3	2	1		2									2		1	
CO 4	1			2									1		2	
CO 5	1			2									1		2	
CO 6	1			2									1		2	

Course code	CSE/PC/B/T/222
Category	Professional Core
Course title	Advanced Object Oriented Programming
Scheme and Credits	L–T–P: 3-0-0; Credits: 3.0; Semester – II
Pre-requisites (if any)	

Syllabus:

Object Oriented Programming with JAVA:

- Introduction to Java: Properties of Java, JVM. [1L] [CO1]
- Primitive data types and strings. [2L] [CO2]
- Representation of numeric data (integers, floating point, characters, strings)
 - Wrapper classes
- Standard operations on primitives and strings. [2L] [CO2]
- Variables, types, expressions, and assignment
- Object-Oriented Programming Concepts. [10L] [CO3]
- Classes, Objects, Methods, Constructors, Accessors, Mutators etc.
 - Packages, interfaces
 - Inheritance
 - Compile time and Run time Polymorphism

Exception handling.	[2L]	[CO4]
Handling exceptional situations via algorithms isolated for that purpose		
Exception classes		
Concurrency-- Threads and Synchronization	[2L]	[CO5]
Input/Output (I/O)	[2L]	[CO6]
Text file I/O, Binary file I/O- Class object I/O with object streams		
Graphical User Interfaces (GUIs).	[2L]	[CO7]
<ul style="list-style-type: none"> Standard GUI components (buttons, text fields, text areas) Action Events and Action Listeners 		
Dynamic Data Structures.	[4L]	[CO6]
<ul style="list-style-type: none"> Collection API 		

Python Programming [24L]

Introduction to Python	[1L]	[CO1]
Fundamentals and Pre-requisites	[1L]	[CO1]
Basic Components	[4L]	[CO2]
Functions	[2L]	[CO2]
Strings Revisit	[2L]	[CO2]
Lists and Dictionaries	[2L]	[CO2]
OOP Concepts:		
Classes and Objects	[2L]	[CO3]
Inheritance & Polymorphism	[2L]	[CO3]
Operator Overloading	[1L]	[CO3]
Exceptions and Error Handling	[1L]	[CO4]
Applications:		
Regular Expressions	[1L]	[CO2]
Files and Data Structures	[1L]	[CO2]
Multi-threaded Programming	[1L]	[CO5]
Network Programming	[1L]	[CO5]
Database Programming	[1L]	[CO5]
Text Processing	[1L]	[CO7]

Reference Books:

1. Introduction to computing and problem solving using Python, E. Balagurusamy, McGraw Hill
2. Programming and problem solving with Python, Ashok Namdev Kamthane & Amit Ashok Kamthane, McGraw Hill
3. Progress in Computer Science with Python, Sumita Arora, Dhanpat Rai and Co.
4. Computer Science with Python, Sumita Arora, Dhanpat Rai and Co.
5. Core Python Programming, R. Nageswara Rao, Dremtech Press
6. Core Python Applications Programming, Wesley J. Chun, Pearson
7. Python Programming – A Modular Approach, Sheetal Taneja & Naveen Kumar, Pearson
8. Python - The complete reference , Martin C. Brown, McGraw Hill
9. Python Programming using Problem Solving Approach, Reema Thareja, Oxford

Course Outcomes (CO):

The students of the course should be able to –

- CO1 Be familiar with platform independent programming concepts
- CO2 Be exposed to primitive and reference data types in Java and Python

- CO3 Able to apply object oriented features of Java to problem solving
- CO4 Be exposed to exception handling, Threads and concurrent programming in Java and Python
- CO5 Be familiar with designing user interfaces, event driven programming
- CO6 Exploit API support for solving problems and apply knowledge in related applications

CO-PO Mapping (3 – Strong, 2 – Moderate and 1 – Weak)

		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Advanced Object Oriented Programming (Java and Python)	CO1	1											
	CO2					2							
	CO3	1		2		1							
	CO4			1	2								
	CO5				1		2						
	CO6	1		3									

CO-PSO Mapping (3 – Strong, 2 – Moderate and 1 – Weak)

		PSO1	PSO2	PSO3	PSO4
Advanced Object Oriented Programming (Java and Python)	CO1			2	
	CO2	1			1
	CO3			2	
	CO4	3			
	CO5	2			
	CO6	3			

Course code	CSE/PC/B/T/223
Category	Professional Core
Course title	Microprocessors and Assembly Language Programming
Scheme and Credits	L–T–P: 3-0-0; Credits: 3.0; Semester – II
Pre-requisites (if any)	

Syllabus:

Introduction to microprocessor , Basic features of 8085 microprocessors and its addressing modes, 8085 microprocessor architecture [2L]

Memory and I/O interfacing , Address decoding, Address aliasing, Memory read and write operations, Timing diagrams, Memory mapped I/O and I/O mapped I/O [4L]

Programming of 8085 Instruction Set, Assembly Language Programming and Illustrative examples [6L]

8085 Interrupt Structure
Data Transfer Techniques [2L]

Synchronous and Asynchronous modes of data transfer, Interrupt driven I/O, DMA [2L]
Peripheral Devices, 8255 programmable peripheral interface, 8254 programmable counter, 8251 UART programmable communication interface, 8257 DMA Controller. 8259 Interrupt controller, 8279