SCHEME OF COURSE WORK

Department of Computer Science and Engineering

Course Details:

COURSE TITLE	ADVANCED PYTHON PROGRAMMING LAB		
COURSE CODE	**22CS11S1** L T P C		0 1 2 2
PROGRAM	B.TECH		
SPECIALIZATION	CSE		
SEMESTER	III Semester		
PRE-REQUISITES	Python Programming		
COURSES TO WHICH IT IS A PRE-REQUISITE	--		

Course Outcomes (COs):

CO1	Apply exception handling and user defined exception(s).
CO2	Develop Module(s) and Package(s) in python.
CO3	Make use of Pandas and NumPy Libraries
CO4	Implement Object Oriented concepts in programming
CO5	Apply Collection modules for the data types

Program Outcomes (POs):

PO 1	Graduates will be able to apply the knowledge of mathematics, science, engineering fundamentals and principles of Computer Science & Engineering to solve complex problems in different domains.
PO 2	Graduates can identify, formulate, study contemporary domain literature and analyze real life problems and make effective conclusions using the basic principles of science and engineering.
PO 3	Graduates will be in a position to design solutions for Engineering problems requiring in-depth knowledge of Computer Science and design system components and processes as per standards with emphasis on privacy, security, public health and safety.
PO 4	Graduates will be able to conduct experiments, perform analysis and interpret data as per the prevailing research methods and to provide valid conclusions.
PO 5	Graduates will be able to select and apply appropriate techniques and use modern software design and development tools. They will be able to predict and model complex engineering activities with the awareness of the practical limitations.
PO 6	Graduates will be able to carry out their professional practice in Computer Science & Engineering by appropriately considering and weighing the issues related to society and culture and the consequent responsibilities.
PO 7	Graduates would understand the impact of the professional engineering solutions on environmental safety and legal issues
PO 8	Graduates will transform into responsible citizens by adhering to professional ethics.
PO 9	Graduates will be able to function effectively in a large team of multidisciplinary streams consisting of persons of diverse cultures without forgetting the significance of each individual's contribution.
PO 10	Graduates will be able to communicate effectively about complex engineering activities with the engineering community as well as the general society, and will be able to prepare reports.
PO 11	Graduates will be able to demonstrate knowledge and understanding of the engineering and management principles and apply the same while managing projects in multidisciplinary environments.
PO 12	Graduates will engage themselves in self and life-long learning in the context of rapid technological changes happening in Computer Science and other domains.

Course Outcomes (CO) versus **Program Outcomes (PO)**

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3		2		2							
CO2	3		2		2							
CO3	3		2		2							
CO4	3		2		2							
CO5	3		2		2							

3 - Strongly correlated, 2- Moderately correlated, 1-Poor correlated, Blank - No correlation

Programme Specific Outcomes (PSOs)

PSO1	Design, develop and test system software and application software for distributed and centralized computing environments to varying domain and platforms.
PSO2	Understand the working of new hardware architectures and components and design solutions for real time problems.
PSO3	Model the computer-based systems and design algorithms that explores understanding of the tradeoffs involved in design choices.

Course Outcomes (CO) versus **Programme Specific Outcomes (PSOs)**

Course Outcome	PSO1	PSO2	PSO3
CO1	3	1	
CO2	3		
CO3	3		
CO4	3		
CO5	3		

3 - Strongly correlated, 2- Moderately correlated, 1-Poor correlated, Blank - No correlation

Assessment Methods	Daily Performance (Record/Observation/Viva): 20 Marks Record: 5Marks, Observation: 10Marks, Viva: 5 Marks Internal Exam : 40 Marks(Exam+Daily Performance) External Exam: 60Marks

Teaching- Learning & Evaluation

Week	Topic/ Contents	Course Outcomes	Sample questions	Teaching learning strategy	Assessment method & schedule
1	Exception Handling and User defined exception(s)	CO1	1. Write a python program to create user defined exceptions. 2. Write a python program that uses raise and exception class to throw an exception.	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- I

				Lecture,	Record, Observation, Viva, Internal Examination- I
2	Modules and Packages	CO2	1. Write a python program to create a module and import the module in another python program. 2. Create a python package having at least two modules in it.	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- I
3	Numpy Library	CO3	1. Python program to demonstrate slicing, integer and boolean array indexing	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- I
4	Numpy Library: Linear Algebra	CO3	1. Write a python program to find eigen values of matrices. 2. Write a python program to find matrix and vector products, matrix exponentiation.	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- I
5	Numpy Advanced	CO3	1. Create a white image using NumPy in Python. 2. Write a program to demonstrate the use of the reshape() method.	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- I
6	Pandas Library	CO3	1. Create a Pandas Series from a dictionary 2. Creating a Pandas DataFrame	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- I
7	Lab Internal Examination- I				
8	Pandas Library: Visualization	CO3	1. Write a program to demonstrate use of group by() method.	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- II
9	Object Oriented Programming: basic	CO4	1. Write a python program to demonstrate various kinds of inheritance	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- II
10	Object Oriented Programming: advanced	CO5	1. Write a python program to demonstrate operator overloading.. .	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- II
11	Python Collections	CO5	1. Write a Python program to show different ways to create Counter. 2. Write a python program to demonstrate working of ChainMap	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- II
12	Python collections	CO5	1. Write a Python program to demonstrate the working of deque.	Lecture, Programming Demo	Record, Observation, Viva, Internal Examination- II

13	Lab Internal Examination- II
14	Preparation and End Semester Practical Examination