

## SCHEME OF COURSE WORK (R- 2020)

### Course Details:

Course Title	Python Programming Lab(Skill Oriented Course Elective – I)		
Course Code	20IT11S1	L T P C	0 0 3 2
Program:	B. Tech.		
Specialization:	Mechanical Engineering		
Semester	III		

**Course Outcomes (COs):** At the end of the course, the student will able to

CO-1	Apply comprehensions, different Decision-Making statements and Functions.
CO-2	Implement various data types like lists, tuples, strings.
CO-3	Use different File handling operations and Maps.
CO-4	Apply Object oriented programming in Python types.
CO-5	Use Pandas and Matplotlib in developing various applications.

**Program Outcomes (POs):** A graduate of mechanical engineering will be able to

PO-1	Apply the knowledge of mathematics, science, engineering fundamentals to solve complex mechanical engineering problems.
PO-2	Attain the capability to identify, formulate and analyze problems related to mechanical engineering.
PO-3	Design solutions for mechanical system components and processes that meet the specified needs with appropriate consideration for public health and safety.
PO-4	Perform analysis, conduct experiments and interpret data by using research methods such as design of experiments to synthesize the information and to provide valid conclusions..
PO-5	Select and apply appropriate techniques from the available resources and current mechanical engineering and software tools.
PO-6	Carry out their professional practice in mechanical engineering by appropriately considering and weighing the issues related to society.
PO-7	Understand the impact of the professional engineering solutions on environmental safety and legal issues.
PO-8	Transform into responsible citizens by resorting to professional ethics and norms of the engineering practice.
PO-9	Function effectively in individual capacity as well as a member in diverse teams and in multidisciplinary streams.
PO-10	Communicate fluently with the engineering community and society, and will be able to prepare reports and make presentations effectively.
PO-11	Apply knowledge of the engineering and management principles to managing projects and finance in multidisciplinary environments.
PO-12	Engage themselves in independent and life-long learning to continuing professional practice in their specialized areas of mechanical engineering.

### Course Outcome Versus Program Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	2			2	3							2
CO-2	2			2	3							2
CO-3	2			2	3							2
CO-4	2			2	3							2
CO-5	2			2	3							2

1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), put -: No Correlation

### Program Specific Objectives (PSOs):

The student must attain the knowledge and skills to

<b>PSO-1</b>	Design, analyse and optimize mechanical systems along with control mechanisms
<b>PSO-2</b>	Manufacture mechanical components by selecting effective processing methods and efficient tools
<b>PSO-3</b>	Design, analyse and evaluate thermal systems

### Course Outcome Versus Program Specific Outcomes:

COs	PSO1	PSO2	PSO3
<b>CO-1</b>	2	2	2
<b>CO-2</b>	2	2	2
<b>CO-3</b>	2	2	2
<b>CO-4</b>	2	2	2
<b>CO-5</b>	2	2	2

1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), put -:

No Correlation

### Teaching-Learning and Evaluation

<b>Assessment Methods:</b>	Observation / Record / End Exam
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Week	Contents	Course Outcomes	Sample Questions	Teaching Learning Strategy	Assessment Method & Schedule
1	Input and Output, Variables and Functions	CO1	Python Program to display all prime numbers within an interval of 20 and 50	Program execution in the lab	Day to day evaluation, Record submission
2	Variables and Functions	CO1	Write a program to swap two numbers without using a temporary variable.	Program execution in the lab	Day to day evaluation, Record submission
3	Loops and conditionals	CO1	Write a program to print multiplication tables of 8, 15, 69	Program execution in the lab	Day to day evaluation, Record submission
4	Strings	CO2	Write a program to find the length of the string without using any library functions.	Program execution in the lab	Day to day evaluation, Record submission
5	Lists	CO2	Write a program to perform any 5 built-in functions by taking any list.	Program execution in the lab	Day to day evaluation, Record submission

6	Tuples	CO2	Write a program to create tuples (name, age, address, college) for at least two members	Program execution in the lab	Day to day evaluation, Record submission
7	Sets	CO2	Write a program to sort given list of strings in the order of their vowel counts.	Program execution in the lab	Day to day evaluation, Record submission
8	Dictionaries	CO3	Write a program to sum all the items in a given dictionary.	Program execution in the lab	Day to day evaluation, Record submission
9	Files	CO3	Write a program to find the most frequent words in a text read from a file.	Program execution in the lab	Day to day evaluation, Record submission
10	Classes	CO4	Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.	Program execution in the lab	Day to day evaluation, Record submission
11	<b>Pandas</b>	CO5	Create a dictionary with at least five keys and each key represent value as a list where this list contains at least ten values and convert this dictionary as a pandas data frame and explore the data through the data frame as follows: i. Apply head () function to the pandas data frame ii. Perform various data selection operations on Data Frame	Program execution in the lab	Day to day evaluation, Record submission
12	Matplotlib	CO5	Write a Python program to draw a line using given axis values with suitable label in the x axis , y axis and a title.	Program execution in the lab	Day to day evaluation, Record submission
<b>Lab External Exam</b>					