

SCHEME OF COURSE WORK

Course Details:

Course Title	: PYTHON PROGRAMMING LAB FOR ELECTRICAL ENGINEERING
Course Code	: 22EE1110
Program:	: B.Tech.
Specialization:	: Electrical and Electronics Engineering
Semester	: IV
Prerequisites	: Problem Solving using C, Electrical Circuit Analysis, Engineering Electromagnetics

Course Outcomes (COs):

CO1: Illustrate Decision Making statements and Functions.

CO2: Develop programs with different data types such as lists, tuples and strings.

CO3: Assess the Object properties and use for GUI applications.

CO4: Evaluate the electrostatic field parameters using Python.

CO5: Determine the Electrical/ Electronic network parameters using Python.

Course Outcome Versus Program Outcomes:

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

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

Program Outcomes (POs):

A graduate of Electrical and Electronics engineering will be able to

PO-1: Apply the knowledge of basic sciences and electrical and electronics engineering fundamentals to solve the problems of power systems and drives.
PO-2: Analyze power systems that efficiently generate, transmit and distribute electrical power in the context of present Information and Communications Technology.
PO-3: Design and develop electrical machines and associated controls with due considerations to societal and environmental issues.
PO-4: Design and conduct experiments, analyze and interpret experimental data for performance analysis.
PO-5: Apply appropriate simulation tools for modeling and evaluation of electrical systems.
PO-6: Apply the electrical engineering knowledge to assess the health and safety issues and their consequences.
PO-7: Demonstrate electrical engineering principles for creating solutions for sustainable development.
PO-8: Develop a techno ethical personality that help to serve the people in general and Electrical and Electronics Engineering in particular.
PO-9: Develop leadership skills and work effectively in a team to achieve project objectives.
PO-10: Communicate effectively in both verbal and written form.
PO-11: Understand the principles of management and finance to manage project in multi disciplinary environments.
PO-12: Pursue life-long learning as a means of enhancing the knowledge and skills.

Assessment Methods:	Assignment / Quiz / / Case Study / Mid-Test / End Exam
----------------------------	--

Teaching-Learning and Evaluation

Week	TOPIC / CONTENTS	Course Outcomes	Sample questions	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1	Basic Input, output, Variable and Functions	CO-1	a. Print the "Python" for 1, print "Day - 1" for 2. By changing the variable "look" for each statement. b. Write a program to print the sum of all the even numbers in the range 1 - 50 and print the even sum. c. Write a Program to display all prime numbers within an interval of 20 and 50.	LAB	Assignment
2	Basic Input, output, Variable and Functions	CO-1	d. Write a program to define a function with multiple return values. e. Write a program which creates an adder given a value (Use only lambda).	LAB	Assignment
3	Loops, Conditionals and Strings	CO-2	a. Write a program to print the following patterns using loop: * ** *** **** b. Write a program to print multiplication tables of 8, 15, 69.	LAB	Assignment
4	Loops, Conditionals and Strings	CO-2	c. Write a program to check if two strings are anagrams or not. d. Write a program to check if the substring is present in a given string or not. (use regular expressions)	LAB	Assignment
5	Lists and Tuple	CO-2	a. Write a program to perform the given operations on a list: i. add ii. insert iii. slicing 2 b. Write a program to get a list of the even numbers from a given list of numbers. (use only comprehensions)	LAB	Assignment
6	Sets and Dictionaries	CO-3	c. Write a program to generate a dictionary that	LAB	Assignment

			contains numbers (between 1 and n) in the form of (x, x*x). d. Write a program to check if a given key exists in a dictionary or not.		
7	EXAM	CO-1,2&3	.Write a program to create tuples (name, age, address, college) for at least two members and concatenate the tuples and print the concatenated tuples. D. Write a program to return the top 'n' most frequently occurring chars and their respective counts. E.g. aaaabbbbcccc, 2 should return [(a 5) (b 4)]		Assignment
8	Sets and Dictionaries	CO-3	a. Write a program that displays which letters are present in both strings. b. Write a program to sort a given list of strings in the order of their vowel counts.	LAB	Assignment
9	Files and Classes	CO-3	a. Write a program to sort words in a file and put them in another file. The output file should have only lower-case words, so any upper-case words from source must be lowered. (Handle exceptions) b. Write a program to find the most frequent words in a text. (read from a text file). c. Write a Python class named Person with attributes name, age, weight (kgs), height (ft) and takes them through the constructor and exposes a method get_bmi_result() which returns one of "underweight", "healthy", "obese".		
10	Files and Classes	CO-3	d. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.	LAB	Assignment
11	Arrays and GUI	CO-4	a. Write a program to create, display, append, insert and reverse the order of the items in the array. b. Write a program to add, transpose and multiply two matrices. c.	LAB	Assignment

			Write a program to create a temperature converter using tkinter		
12	Additional Experiments	CO-4	11. Modelling of an electrical circuit using Python program. 12. Apply Nodal analysis and Mesh analysis for a given electrical circuit.	LAB	Assignment
13	Additional Experiments	CO-4	13. Conversion between Star-Delta configurations and generate three phase voltage waveforms for Star and Delta configurations using Python commands. 14. Generate Continuous and Discrete time signals for elementary functions	LAB	Assignment
14	Additional Experiments	Co-5	15. Obtain the response of a Second-order system (Time-response, Root locus, Bode plot). 16. Calculation of the equivalent circuit parameters and efficiency of a Transformer at different loads using Python commands.	LAB	Assignment
15	Test2	Co-3,4 &5	--	--	--
16	Final Exam	All CO's	--	--	--