

INSTITUTE	FACULTY OF TECHNOLOGY
PROGRAM	MASTER OF TECHNOLOGY in ELECTRICAL ENGINEERING (Specialization in ELECTRIC VEHICLE)
SEMESTER	3
COURSE TITLE	PROGRAMMING FOR EVERYONE
COURSE CODE	01OE9004
COURSE CREDITS	3

Objective:

- 1 Next generation will get help using multi-purpose programming language that allows different users to create applications of various domains. Students will be able to learn primary fundamentals of programming language with object oriented concepts. Students will be able to analyse and visualize the data using programming libraries

Course Outcomes: After completion of this course, student will be able to:

- 1 Apply basic programming fundamentals to solve various problems.
- 2 Create object-oriented solution by applying various concept like class, object and polymorphism
- 3 Analyze various types of data using libraries.
- 4 Implement various data visualization techniques using programming language.

Pre-requisite of course: Programming fundamentals

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	Introduction to Programming Language Basics of Python including data types, variables, expressions, objects, looping and functions, Python data structures including String, Array, Set, Dictionary and operations	8
2	Object oriented Concepts Procedural and Object-Oriented Programming, Classes and working with instances, Method overloading, Polymorphism, Inheritance, importing internal module as well as external modules in the code Packages understanding and their usage	9
3	Methods Introduction, Types of Methods, File Handling, File Operations, Abstract Class, Multi-threading, Date and Time	3

Contents : Unit	Topics	Contact Hours
4	Exception Handling Exception Handling, Handling and helping file operations, coding with the exceptional handling and testing Anonymous method, Properties, Indexers	8
5	Data Analysis Data Analysis: Understanding the role of programming in data science, Preparing the data, Performing exploratory data analysis, Learning from data, Data Frame, Data Analysis	8
6	Data Visualization Introduction to Data visualization, Plot different types of data using line charts, graphs, Bar Graphs, Histograms, Scatter plots, Heat Maps	8
Total Hours		44

Textbook :

- 1 Starting Out with Python, Tony Gaddis, Pearson, 2015

References:

- 1 Beginning Python, Beginning Python, Peter C. Norton, ?Alex Samuel, ?Dave Aitel, Wiley, 2008
- 2 Python Algorithms, Python Algorithms, Magnus Lie Hetland, Apress, 2014
- 3 Python 3 Object-oriented Programming, Python 3 Object-oriented Programming, Dusty Phillips, Packt Publishing, 2015
- 4 Python for Unix and Linux System Administration, Python for Unix and Linux System Administration, Noah Gift, Jeremy M. Jones, O'Reilly Media, 2008
- 5 The Essential R Reference, The Essential R Reference, Mark Gardener, Wiley, 2012

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
5.00	10.00	15.00	30.00	20.00	30.00

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

Instructional Method:

- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
- 3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
- 4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory

Supplementary Resources:

- 1 <http://www.w3schools.com>
- 2 <http://docs.python.org>
- 3 <http://www.tutorialspoint.com>
- 4 <http://www.learnpython.org>
- 5 <https://www.tutorialspoint.com/r/index.htm>
- 6 <https://www.w3schools.com/r/>