LOK JAGRUTI UNIVERSITY (LJU)

INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Computer Engineering (701)

Bachelor of Technology (B.E.) – Semester – III

Course Code:	**017012491**
Course Name:	**Fundamentals of Computer Science using Python - I**
Category of Course:	Engineering Science Course (ESC)
Prerequisite Course:	Computer Programming using C (017012191)

Teaching Scheme				
Lecture (L)	**Tutorial (T)**	**Practical (P)**	**Credit**	**Total Hours**
2	**0**	**4**	4	**20**

T4 Detailed Syllabus

Unit No.	Topic		
09	**Advanced OOP Concepts and Introduction to NumPy**		
	9.1 Polymorphism –Definition of Polymorphism • Method Overriding in Python (https://www.scaler.com/topics/python/polymorphism-in-python/) • Operator Overloading (https://www.scaler.com/topics/operator-overloading-in-python/) **Note: For Operator Overloading, we will be using only Mathematical (add, sub, mul, truediv, floordiv, mod, pow), Comparison (lt, gt, le, ge, eq, ne)**		
	9.2 Inheritance – • single, multi-level, multiple, hybrid, super() function (https://www.scaler.com/topics/python/inheritance-in-python/) everything EXCEPT issubclass() and isinstance() from this link is part of the syllabus. • Method Resolution Order (MRO) (https://www.geeksforgeeks.org/method-resolution-order-in-python-inheritance/) • Abstract Class (https://www.scaler.com/topics/abstract-class-in-python/) **Note: For MRO refer only new style classes of Python 3 from the link. Not old style classes of Python 2.**		
	9.3 Arrays -Creating a NumPy ndarray Object, 1D, 2D and 3D Arrays (https://www.w3schools.com/python/numpy/numpy_creating_arrays.asp) **DO NOT refer higher dimensional arrays (greater than 3D) from this link**		
	9.4 Array • Indexing (https://www.w3schools.com/python/numpy/numpy_array_indexing.asp) • Slicing (https://www.w3schools.com/python/numpy/numpy_array_slicing.asp) • Shape (https://www.w3schools.com/python/numpy/numpy_array_shape.asp) • Reshaping (https://www.w3schools.com/python/numpy/numpy_array_reshape.asp) • Iteration (https://www.w3schools.com/python/numpy/numpy_array_iterating.asp)		
	9.5 Built-in functions • Concatenate (https://www.w3schools.com/python/numpy/numpy_array_join.asp) refer only concatenate function from this link • array_split (https://www.w3schools.com/python/numpy/numpy_array_split.asp) refer only array_split function from this link • where (https://www.w3schools.com/python/numpy/numpy_array_search.asp) refer only where function from this link • sort (https://www.w3schools.com/python/numpy/numpy_array_sort.asp) refer only sort function from this link		
10	**Introduction to Matplotlib**		
	10.1 Basic Methods – • Plot() (https://www.w3schools.com/python/matplotlib_plotting.asp) • Markers (https://www.w3schools.com/python/matplotlib_markers.asp) • colors • linestyles (https://www.w3schools.com/python/matplotlib_line.asp) • show() Describing the plot – • xlabel ylabel, title with different fonts, colors and positions (https://www.w3schools.com/python/matplotlib_labels.asp) • Grids (https://www.w3schools.com/python/matplotlib_grid.asp) • Subplots (https://www.w3schools.com/python/matplotlib_subplot.asp)		
	10.2 • Simple Scatterplots with color, size and alpha (https://www.w3schools.com/python/matplotlib_scatter.asp) • Simple Bar charts bar() and barh() (https://www.w3schools.com/python/matplotlib_bars.asp) • Simple Histogram with hist() with only x, bins, orientation, align attributes • Simple pie charts with pie along with labelling and coloring (https://www.w3schools.com/python/matplotlib_pie_charts.asp)		