LOK JAGRUTI UNIVERSITY (LJU)

INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Computer Engineering (701)

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

Fundamentals of Computer Science using Python - I

Detailed and Comprehensive Syllabus for T2

Unit No.	Topic			Teaching Hours
03	**Functions, Scoping and Abstraction** 3.1 • Declaring/defining a function (with 0 or more arguments, with return statement, without return statement) • Invoking/Calling a function • Function Specification using docstring (also explain how to display this specification using help function) 3.2 • Function arguments: keyword, default, positional • variable-length arguments -*args and **kwargs 3.3 • Local v/s Global variables -use of keyword “global” • Recursive functions -functions that call themselves			**1 (5%)**
04	**Immutable Data Structures** 4.1 **Strings** -immutability, declaring (with and without str()), accessing through for loop, slicing, concatenation Note: for declaring a string with str(), no need to show encoding and errors parameters in this semester. **String Methods:** • capitalize(), isalnum(), isalpha(), islower(), isupper(), lower(), upper(), isnumeric(), strip(), count() • find() with value, start and end parameters, • index() with value, start and end parameters, • split() with separator and maxsplit parameters, • translate() with maketrans function to create mapping table and then explain how to use translate to remove punctuation from a string. Use of translate with dictionary not in the syllabus. 4.2 **Tuples** – create (with and without tuple()), assign, access, del, slicing, concatenation, comparing tuples using >, <, ==, ord() and chr() functions **Tuple Methods:** count() method, index() method 4.3 **Built-in functions (applicable to both units 4 and 5 with tuples, strings, lists, dictionaries (wherever possible to use))** • sorted with iterable, key and reverse parameters • reversed, min, max, len • enumerate with iterable and start parameters			**2 (10%)**
05	**Mutable Data Structures** 5.1 **Lists** -mutability, declaring (with and without list()), accessing through for loop **List Methods:** append(), count(), extend(), index(), insert() with pos and elmnt parameters, pop(), remove(), reverse(), sort() with reverse and key parameters 5.2 **Dictionaries** -create (with and without dict()), access using for loop, mutability, **Dictionary Methods:** clear(), copy(), get() with keyname and value parameters, items(), keys(), update(), values(), setdefault() -with keyname and value parameters 5.3 **Sets** -declaring (with and without set()), accessing, frozenset() **Consider all parameters for the following set methods:** issubset(), issuperset(), union(), intersection(), difference(), symmetric_difference(), copy() 5.4 **Lambda functions:** map(function, iterables), reduce(function, sequence), filter(function, iterables)			**4 (15%)**

Note: Nesting of data structures (wherever possible) is also a part of the syllabus. All types of programs that can be done by only using any/all part/s of Units 1 to 5 are in the syllabus. In the case of Data structure methods that have only one parameter, please consider that parameter as part of the syllabus (even though names of those parameters are not specifically mentioned in the syllabus).