

Bachelor of Technology (BTech.)

Batch 2016-2020

Course name	Introduction to computer and programming using Python			Semester:	First
Faculty				Type	Core
No of Contact Hours	3-1-4	Credits	6	Pre-requisites	

Brief description of the Course

This course is intended to introduce students not only to the coding of computer programs, but also to computational thinking, the methodology of computer programming, and the principles of good program design including modularity. In this course student will learn how to write simple programs using Python, object-oriented programming language that can be used for many kinds of software development projects.

Course Objectives

- Learn core Python scripting elements
- Discover how to work with lists and sequence data
- Write Python functions to facilitate code reuse
- Use Python to read and write files, work with the Python standard library
- Explore Python's object-oriented features and Search text using regular expressions

Course Outcome

- Demonstrate knowledge of basic concepts, syntax and control structures in programming.
- Devise solutions to simple computing problems under specific requirements.
- Problem Solving: You will be capable to analyses problems and synthesize suitable solutions.
- Confidently design algorithms to solve simple problems,
- Be able to implement those algorithms in the Processing programming environment,

Text Book:

Introduction to Computer Science using Python, by Charles Dierbach

Reference Books:

Python: The Complete Reference, by Martin C. Brown

Learning Python: Powerful Object-Oriented Programming, by Lutz M

EVALUATION COMPONENTS:

Components of Course Evaluation	Percentage Distribution
Mid Term Examination	15+15
End term Examination	30

Lab + Quizzes	40
Total	100

Detailed Course Plan

S. No	Topic	# of Lecture
1	Program Basic , Hardware Basics , Programming Languages, The Software Development Process	3
2	Elements of Programs, Expressions, Output Statements, Assignment Statements, Data Types, Top-Down Design, Bottom-Up Design	3
3	Control Structures, Simple Decisions, Forming Simple Conditions, Two-Way Decisions, Multi-Way Decisions	3
4	Control Structures, , Indefinite Loops, Interactive Loops, File Loops, Nested Loops	3
5	Defining Functions, Functions and Parameters, Functions that Return Values, Functions and Program Structure.	3
6	Computing with Booleans, Boolean Operators, Boolean Algebra, Random Numbers	3
7	Sequences. Strings. Files. Exceptions. Text Processing. Tuples and Lists.	3
8	Introduction to object oriented, Objects, Class, The Object of Objects	3
9	Buffer	
10	Graphics Programming, Using Graphical Objects, Interactive Graphics	3
11	Graphics Objects, Entry Objects, Displaying Images, Generating Colors.	3
12	Program Specification , Designing the Program, Modularizing the Program	3
13	Defining New Classes, Objects and Encapsulation , Encapsulating Useful Abstractions, Putting Classes in Modules, Widget Objects	3
14	Data Collections, Applying Lists , List Operations, Combining Lists and Classes, Non-Sequential Collections , Dictionary Basics, Dictionary Operations	3