

COURSE CODE	COURSE TITLE	L	T	P	C
1152IT139	Python Programming	3	0	0	3

Course Category:

~~Foundation (0)/ Program Core (1)/ Program Elective (2) / Allied Elective (3) / University Elective (4) / Value Education Elective (5) / Independent Learning (6) / Industry – Higher Learning Institute Interaction (7)~~

1. Preamble:

This course focused on constructing reasonably self-contained programs, where the input and output either comes from a user or from files, and any "external" functionality comes from imported Python modules.

2. Pre-requisites:

- Basics of Computing and C Programming

3. Link to Other Courses:

- Image Processing
- Data Communications and Computer Networks
- Cryptography and Network Security

4. Course Educational Objectives:

Students undergoing this course are exposed to

- Introduces core programming basics—including data types, control structures, algorithm development, and program design with functions
- Course discusses the fundamental principles of Object-Oriented Programming, as well as in-depth data and information processing techniques
- Students will solve problems, explore real-world software development challenges, and create practical and contemporary applications.

2. Course Outcomes:

Students undergoing this course are able to:

CO Nos.	Course Outcomes	Level of learning domain (Based on revised Bloom's)
CO1	Explain various operators used in python.	K3
CO2	Apply the string handling functions to solve the given problem	K3
CO3	Use image processing techniques with python programming to solve a given problem.	K3
CO4	Describe Object oriented concepts with python	K2
CO5	Discuss the functions of networking with python	K2

K2-Understand, K3-Apply

3. Correlation of COs with Program Outcomes :

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	L	L								
CO2			M	L	L							
CO3		M	M	M		L						
CO4		M	M	M	L	L						
CO5			M	L	L		L					

H- High; M-Medium; L-Low

4. Syllabus Content:

UNIT I INTRODUCTION

L- 9

installing Python; basic syntax, interactive shell, editing, saving, and running a script-variables, assignments; immutable variables; numerical types; arithmetic operators and expressions; comments in the program; understanding error messages;

UNIT II CONDITIONAL STATEMENT & STRING HANDLING

L- 9

Conditions, Boolean logic, logical operators; ranges; Control statements: if-else, loops (for, while); short-circuit (lazy) evaluation - Manipulating files and directories, os and sys modules; text files: reading/writing text and numbers from/to a file; creating and reading a formatted file (csv or tab-separated). String manipulations: subscript operator, indexing, slicing a string; strings and number system: converting strings to numbers and vice versa. Binary, octal, hexadecimal numbers .

UNIT III IMAGE PROCESSING WITH PYTHON

L-9

Design with functions: hiding redundancy, complexity; arguments and return values; formal vs actual arguments, named arguments. Program structure and design. Recursive functions- Simple Graphics and Image Processing: "turtle" module; simple 2d drawing - colors, shapes; digital images, image file formats, image processing Simple image manipulations with 'image' module (convert to bw, greyscale, blur, etc).

UNIT IV OBJECT ORIENTED PROGRAMMING WITH PYTHON

L- 9

Classes and OOP: classes, objects, attributes and methods; defining classes; design with classes, data modeling; persistent storage of objects - OOP, continued: inheritance, polymorphism, operator overloading; abstract classes; exception handling, try block

UNIT V NETWORKING WITH PYTHON

L- 9

Multithreading, Networks, and Client/Server Programming; introduction to HTML, interacting with remote HTML server, running html-based queries, downloading pages; CGI programming, programming a simple CGI form.

Total: 45 PERIODS

5. Learning Resources

i. Text Book:

1. “Learning Python: Powerful Object-Oriented Programming: 5th Edition Shroff; Fifth edition (24 July 2013)

ii. Reference Books

1. “Python Essential Reference”. Addison-Wesley Professional; 4 edition (July 19, 2009) by David M.Baezly

2. “Python Cookbook” O'Reilly Media; 3 edition (June 1, 2013) by David M.Baezly.

iii. Online Resources:

1. <https://www.codecademy.com/learn/python>
2. www.learnpython.org/