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Course Code: CSE304

PYTHON PROGRAMMING WITH WEB FRAMEWORKS

Course Objectives

This course will help the learner to develop python applications using predefined and user defined objects. The learner will be able to develop client server programs and web applications using Django.

UNIT - I — 11 Periods

Introduction: Introduction to Python - use IDLE to develop programs - basic coding skills - work with data types and variables, numeric data, string data - Python functions - code control statements
Functions and modules: Defining and using functions - create and use modules - using standard modules - lists and tuples

UNIT - II — 12 Periods

File I/O, Exceptions: Introduction to file i/o - text files and csv files - handling single and multiple exceptions
Other concepts and skills: Work with numbers, strings, dates and time - dictionaries - recursion and algorithms

UNIT - III — 12 Periods

Object Oriented Programming: Introduction to classes and objects - define class - object composition - encapsulation - inheritance
Internet Client Programming: Internet Clients - Transferring files - Network news - E-mail - Related modules

UNIT - IV — 11 Periods

Web Clients and Servers: Introduction - Python Web client tools - Web Clients - Web (HTTP) Servers
Web Frameworks - Django: Web Frameworks - Django - projects and apps - Blog - Add database service - Python application shell - Django administration app - Blog's user interface - improving output - working with user input - Forms and Model Forms

TEXT BOOKS

1. Michael Urban, Joel Murach. *Murach's Python Programming,* Mike Murach & Associates, First Indian Reprint, 2017.
2. Wesley J. Chun, *Core PYTHON Applications Programming*, Prentice Hall, Third Edition, 2013.

REFERENCE

1. Mark Lutz, *Learning Python*, O'Reily Media, Fifth Edition, 2013

ONLINE MATERIALS

1. https://www.amazon.com/Murachs-Python-Programming-Michael-Urban/dp/1890774979#reader_1890774979
2. https://www.oreilly.com/library/view/core-python-applications/9780132779371/
3. https://github.com/halterman
4. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-0001-introduction-to-computer-science-and-programming-in-python-fall-2016/
5. https://nptel.ac.in/courses/106106182/

UNITWISE LEARNING OUTCOMES

Upon successful completion of each unit, the learner will be able to

Unit I	• Write programs using predefined python objects and functions • Develop functions and modules using standard modules
Unit II	• Demonstrate file manipulation and exception handling • Operate on string, dictionary objects and develop recursive applications
Unit III	• Solve problems using object oriented concepts involving inheritance • Develop applications for internet client programming
Unit IV	• Develop programs for web client and server interaction • Design web applications using Django framework

COURSE LEARNING OUTCOMES

Upon successful completion of this course, the learner will be able to

- Develop applications using predefined objects of Python
- Create user defined functions and modules for application development
- Schedule read and write operations using files
- Demonstrate exception handling techniques and recursive algorithms
- Use object oriented programming concepts to solve inheritance problems
- Develop applications for file transfer across web clients and web applications using Django framework

LIST OF LABORATORY EXERCISES

1. Programs using numeric data types and string data
2. Programs using selection and iteration structures
3. Programs using functions and modules (built-in and user defined)
4. Programs using list, tuple, dictionary
5. Programs for file i/o with text and csv files
6. Programs for exception handling
7. Programs to demonstrate recursive algorithms
8. Programs to demonstrate inheritance
9. Programs to demonstrate file transfer between web clients and servers
10. Programs to host web applications using Django