

ITP 100 Software Design

COURSE OUTLINE

Prerequisites:

There are no prerequisites. It is strongly recommended students have taken or are taking ITE 115 or have the equivalent experience with Windows and Microsoft Office Professional

Course Description:

This course introduces the principles and practices of software development. It includes instruction in critical thinking, problem solving skills, and essential programming logic in structured and object-oriented design using contemporary tools.

Semester Credits: 3 Lecture Hours: 3 Lab/Recitation Hours: Select Hours

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Course Outcomes

At the completion of this course, the student should be able to:

1. Write an algorithm to solve a programming problem given as a story problem.
2. Using an algorithm draw basic flowcharts using the following symbols: start, stop/return, decision, process, and input/output.
3. Analyze an algorithm and determine the input, output, and processing requirements.
4. Determine the proper data type for each variable used within a program.
5. Design sequential structures to control program flow.
6. Design conditional structures to control program flow.
7. Design repetitive structures to control program flow or calculate summary data.
8. Utilize arrays for data storage within a program.
9. Consider usability when designing user interaction.
10. Use file input and output within a program
11. Distinguish between object-oriented and procedural design
12. Design basic object-oriented classes and driver programs

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Required Materials:

1. Textbook:

Starting Out with Python, 2nd Edition by Tony Gaddis, Pearson,
2012, ISBN 978-0-13-257637-6.

2. Software:

Python 3.3.2 and Raptor (both downloaded from the internet)

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Topical Description: (Outline chapters and sections to be covered in the book – may include timeline)

Week 1	Algorithms and Problem Solving
Week 2	Chapter 1 Intro to Computers & Programming
Week 3	Chapter 2 Input, Processing, and Output
Week 4	Chapter 3 Simple Functions & Chapter 6 Value-Returning Functions (pages 214-225 ONLY)
Week 5	Chapter 4 Decision Structures and Boolean Logic
Week 6	Chapter 5 Repetition Structures
Week 7	Chapter 5 Using Repetition Structures for Input Validation
Week 8	Midterm
Week 9	Chapter 6 Modules (pages 203-214) Chapter 7 Introduction to File Input and Output
Week 10	Chapter 8 Lists and Tuples
Week 11	Chapter 9 More about Strings
Week 12	Chapter 11 Classes and Object-Oriented Programming
Week 13	Final Project Lab
Week 14	Object-Oriented Lab Project
Week 14	Review

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Notes to Instructors

(List information about optional topics, departmental exams, etc)

1. Final exam part I is same for all sections. Part II is at the discretion of the instructor.

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