

Course Outcomes	CSC 2700
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CSC 2700: Special Topics in Computer Science

“Programming in Python”

Credit Hours: (1-3) variable credit

Frequency: on demand

Prerequisites:

CSC 1254 or CSC 1351 or permission of department.

Prerequisites by Topics:

Any 2-course sequence in an object-oriented programming language

Catalog Course Description:

May be taken for a max. of 6 hrs. when credit topics vary. Total credit earned in CSC 2700 and 4700 should not exceed 9 hours. Specialized areas of current interest in computer science.

Class Title: Programming in Python (Spring 2007)

Course Outcomes

1. Master an understanding of scripting and the contributions of scripting languages.
2. Master an understanding of Python especially the object-oriented concepts,
3. Master an understanding of the built-in objects of Python,
4. Be exposed to advanced applications such as TCP/IP network programming, multithreaded programming, Web applications, discrete-event simulations, etc.

Texts and Other Course Materials

David M. Beazley. Python Essential Reference. 3rd Ed. Sams, Indianapolis. 2006. ISBN: 0-6723-2862-3.

Wesley J. Chun. Core Python Programming. 2nd Ed. Prentice Hall, Upper Saddle River, NJ. 2007. ISBN: 0-132-26993-7.

Mark Pilgram. Dive into Python. <http://diveintopython.org/>

Major Topics

- Overview of scripting languages, the role of scripting languages and the appropriateness of these languages for particular applications; differences in terms of power, clarity, degree of object-orientation, etc.,

- Comparison of scripting languages with other object oriented languages,
- Portability issues,
- Syntax and semantics of the Python language including types, operators, function, modules, classes, exception handling,
- Built-in objects of numbers, strings, lists, tuples and dictionaries, iterators and generators,
- Regular expressions,
- Standard libraries for Python,
- Application interfacing,
- Interfaces to system languages,

Assignments/Projects/Laboratory Projects/Homework

A number of programming assignments required to demonstrate specific Python programming skills. Example program: Write a modular program in Python according to the specifications provided in the assignment.

Curriculum Category Content (estimated in semester hours)

Area	Core	Advanced	Area	Core	Advanced
Algorithms	10	4	Data Structures	5	2
Software Design	3	1	Prog. Languages	5	5
Computer Arch.					

Relationship to Criterion 3 Outcomes

A	B	C	D	E	F	G	H	I	J	K
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Math and Fundamentals:

Data Structures:

Sequences (lists, tuples, dictionaries) – 7 hours

Algorithms and Software:

Control structures – 3 hours

Tuples, objects – 5 hours,

Modules, functions, classes – 5 hours,

OS services – 4 hours

The Python library – 6 hours

Design – 4 hours use of classes, modules and functions in python

Computer Organization and Architecture:

Concepts of Programming Languages:

Coroutines (with respect to generators) – 1 hour,

Iterators – 2 hours,

Functional programming support (lambda, list comprehensions, generator expressions, map(), zip(), reduce(), filter()) – 5 hours,

Threads – 2 hours

Social and Ethical Issues:

Oral Communication (presentations):

Written Communication:

All programming assignments must meet the criteria set forth in Guido's "Style Guide for Python Code" found at:

<http://www.python.org/dev/peps/pep-0008/>

and "Docstring Conventions" at:

<http://www.python.org/dev/peps/pep-0257/>.

Course Coordinator: Leonard Blanks

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