

2017 ESAP COMPUTER SCIENCE COURSE

First week - Intro to Python. Decomposing a computational task into smaller components (functions). Intro to objects.

Second week - Lists, Strings, and Dictionaries. File Input/Output.

Third week - Intro to Pygame. Build your own game!

Listed below are the activities planned for each day. Note that this is subject to a fair amount of change.

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(A)

Introduction to Computer Science. What is computational thinking?

Precision, Decomposition, Abstraction.

(B)

Familiarity with your computing environment - Sublime Text 3, Python.

Write a hello world program. Basic intro to Python.

Draw something with turtle graphics.

Documentation for turtle graphics -

<https://docs.python.org/3.0/library/turtle.html> (Links to an external site.)Links to an external site.

(C)

Strings.

Functions - syntax. What does a return statement mean?

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Data types - ints, doubles, booleans.

Operations on integers – “%” operator

String operations

Comparison operations – (= versus ==)

Exercises - expression evaluation - <http://www.cis.upenn.edu/~esapcs/content/05-expressions.html>

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Function arguments and return values.

Coding bat exercises on functions.

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(A)

Object oriented programming using tkinter canvas

What is an object. The usage of the dot operator

(B)

Ehrenstein circles.

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Recursion.

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Fractal drawings.

Sierpinski.

<http://www.seas.upenn.edu/~esapcs/content/08-recursion.html>

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String manipulations

<http://www.seas.upenn.edu/~esapcs/content/10-string-manipulation.html>

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Trip to DC!

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<http://www.seas.upenn.edu/~esapcs/content/11-list-manipulation.html>

[list_strings.pptx](#)  

[sneakyAppend.py](#)   - example of passing list references.

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File I/O - <https://docs.python.org/3/tutorial/inputoutput.html> (Links to an external site.)Links to an external site.

<http://www.seas.upenn.edu/~esapcs/content/12-file-input-and-output.html>

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Intro to Pygame.

<https://www.pygame.org/docs/tut/MakeGames.html> (Links to an external site.)
[Links to an external site.](#)

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Work on your own game!

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Work on your own game!

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Work on your own game!

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Final day. Demos.