COMP-4005 Course Syllabus

1 Course Information

Course Name	COMP-4005: Python Programming I (Foundational Course)
Prerequisites	None
Required Textbook	No textbook required

2 Course Description

This **accelerated introductory course** covers the basics of Python programming. Students taking this course may have *little or no prior programming experience* so the course will begin with the absolute basics. By the end of the course students will be able to develop, design and implement Python programs, explain the differences between data types, learn to read from and write to files, understand and use data structures, understand and use recursion, and use Python packages.

3 Textbook and Materials

There is no required textbook for participation in this class. All materials will be available for students enrolled in the course at `https://canvas.du.edu` and online at various internal and external web sites. You will need a good internet connection and a laptop that meets DU specifications. (See `https://www.du.edu/it/support/how-to/students/laptops`). For technical support in using Canvas, please go to `http://otl.du.edu/knowledgebase/canvas`

4 Course Learning Objectives

Students that complete this course should have an understand of computer programming including variables, conditionals, loops, functions and classes. They will be able to do the following:

1. Create a program and execute it from the command line using Python
2. Use and understand variables and what they are useful for in programs
3. Use and understand data types in Python, and when to use them (lists, tuples, hashmaps)

4. Use if/then/else statements including nesting
5. Understand boolean operations and composition (e.g., and/or/not)
6. Implement loops using common Python constructs (for/range loops, while loops, list iteration loops)
7. Write functions in Python that take arguments and return a value or values
8. Run and debug (step through) program execution to find errors
9. Open files, read data from and write data to those files
10. Use classes as more complex data structures than lists/maps/tuples

5 Course Outcomes

The high level outcomes from this course are as follows:

1. Take a problem statement (e.g., given a comma separated value file, read in the data and sort it based on the third column) and break it down into concrete programming steps.
2. Once programming steps are provided (e.g., create a function that sorts a list of numbers), implement it in code.
3. Read/interpret what a program is doing based on its source code.

6 Program Level Goals

Courses in the cyber security MS program, including this one, should contribute to overall program level outcomes for students. This course contributes to the following program level goals:

1. Apply programming and core CS topics; including network programming, algorithms and data structures, and computer organization.
2. Utilize and comprehend at least one compiled programming language (C/C++) and two or more interpreted/scripting languages (Bash, Python).

7 Knowledge Units

This course covers the following NSA cybersecurity Knowledge Units:

1. Basic Scripting and Programming (BSP, Core Technical KU)
2. Systems Programming (SPG, Optional KU)

8 Attendance Policy

Regular attendance is expected. Students are responsible for all material covered in class, including announcements and handouts.

9 Academic Integrity

All work submitted for this course must be the student's own original work. Any instance of plagiarism or cheating will be dealt with according to the university's academic integrity policy. Refer to the Student Rights and Responsiblities, as well as the University of Denver Student Honor code, here: `https://studentaffairs.du.edu/student-rights-responsibilities`

10 Disability Services

If you have a disability that may affect your ability to complete the work for this course, please contact the Disability Services office at: `https://studentaffairs.du.edu/disability-services-progr`