**Special Topics: Aginformatics: An introduction to Python programming for applied sciences.**

**CSES 7970**

**Time and Location: TBD**

Python is a relatively new, rapidly growing programming language that has easier to understand syntax and has a less steep learning curve compared to other programming languages. This class will focus on learning the Python programming language and using the Python in several hands-on ‘big data’ projects.

**Instructor:**

Dr. Scott McElroy

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**Office Hours:**

By appointment only

**Credits:** 3

**Course Description:**

An introduction to the Python programming language using the IDLE integrated development environment (IDE), the Enthought Canopy IDE, and the command-line interface. Students will focus the first half of the semester familiarizing themselves with language syntax, control structures, and object-oriented programming. Basic algorithms will be developed, however not in-depth as would be expected in an introductory computer science class. The second half of the semester will be focused on utilizing Python to solve real world problems. We will specifically be talking about manipulation of large text files, producing figures via the matplotlib library, and using the DarkSky API to predict specific occurrences based on weather. Students will also cover os, sys, and getopt module for making Python scripts for running in the command line interface.

Students should understand that you cannot learn to program by watching someone else program or by reading a book. To learn to program you have to program. You have to run into problems you do not know how to solve, that challenge you, that frustrate you. This class will be challenging, but also very rewarding as you will learn to solve problems and write code for things you never thought possible. Python will open doors for your future research that you

**Course Objectives:**

1. Become fluent in basic Python syntax, control structures, and conditional statements.

2. Become familiar with Object Oriented Programming in Python.

3. Become familiar with several modules within the standard library such as OS, SYS, and GETOPT.

4. Learn how to execute Python scripts in the command line and become familiar with basic command line tools.

5. Learn to use application program interfaces (APIs) designed for Python or with Python wrappers to acquire data from the Internet.

**Course Text:** The Internet via the Google Search Engine. The world is your oyster.

I highly recommend The Self-Taught Programmer by Cory Althoff. The examples are in Python 3 which could be a little confusing since the class is being taught in Python 2, but it also may be beneficial because it allows you to see the differences between Python 2 and 3.

**Course Materials:**

All class material will be posted on my GitHub page (<https://github.com/mcelrjo/AgInformatics>).

I would like you all to complete the Git Module on CodeAcademy (<https://www.codecademy.com/learn/learn-git>) during the couple weeks I am out of town in late June. There will be other assignments during these two weeks as well.

**Class Attendance:** There is no way you can pass this class if you are absent. Class will begin on Wednesday May 16. There will be no in-person lecture from June 16 to July 4. Because of this, the first half of this class will be very intensive to learn the Python language. We will meet Wednesday and Fridays up until June 16. The last two weeks of June will have video lectures to watch and separate projects to work on.

**Exams:**  There will be no exams only week long coding assignments.

**Course Grading:** There will be four coding assignments with definitive end dates. Coding assignments will be graded by professor and/or anonymously by other students.

Course grading will be on the standard 100% scale. Each coding assignment will count for 25% of the final grade.

Grading seems a little ridiculous for a course like this. After all, if you did not want to learn Python why are you even in this course. Thus, I will primarily be grading on effort. If you put in the time and make a solid effort in the course then you will do well. Those who try to fake effort are easily seen.

**Learners with Disabilities:**

Auburn University is committed to providing accommodations and services to learners with documented disabilities. Any learner with a qualified disability which requires accommodations should contact The Program for Learners with Disabilities, 1244 Haley Center, Auburn University, AL 36849, 334-844-2096 PH, 334-844-2099 FAX, [scw0005@auburn.edu](mailto:scw0005@auburn.edu). More information is available on their website at [www.auburn.edu/disability](http://www.auburn.edu/disability). The office will fax or mail the required forms to learners to apply for services. Learners who have questions to participate in this course should contact the above office in advance to ensure proper accommodations.

**Academic Honesty:** The Student Academic Honesty Code applies to all students taking classes at Auburn University. The code at <https://sites.auburn.edu/admin/universitypolicies/Policies/AcademicHonestyCode.pdf> will be followed in any suspected cases of academic misconduct in this class.