***Fundamentals of Software Development - Python***

***SEIS 603 Section 03***

***Fall Semester 2019***

***Wednesdays 5:45 PM – 9 PM***

**Course Schedule: Topics, Activities, and Readings**

**Version 1 -- 9/4/19**

**Before class:**

* **Do the Assigned Readings,** as given below in the schedule. **Be sure to run and study the ActiveCode examples within our online interactive book.** Also, **be sure to take all the "Check Your Understanding" Quiz questions** and understand the correct answers. Reading Quiz (RdQ) questions are sometimes based on these code examples and quiz questions.
* **Watch the Reading Lecture Videos that discuss the assigned readings,** with links posted on Canvas within the class's module. Each video discusses a section of the assigned chapter readings while demonstrating the behavior of provided code examples. These examples are run as embedded in the online book, as well as within either the PyCharm IDE or a Jupyter Notebook.
* **Take the next Reading Quizzes (RdQ) outside of class** on Canvas. Each RdQ has one problem based on the assigned reading and related video lectures for the upcoming class.

**During class:**

* **Work together in class on the next Lab Assignment (L)**, writing Python code to solve problems related to the assigned readings and video lectures. You will submit your finished code to Canvas, but usually it won't be graded in detail.
* **The next Homework Problem Set (H)** will be presented and discussed. Sometimes starting code as **.py** files is provided and posted on Canvas. Sometimes homework help videos are provided.
* Any remaining class time may be used to finish the lab and start on the homework; both are usually **due a week later.**

**Before the next class:**

* **Outside of class, take the next Review Quiz (RvQ)** on Canvas**.** It will contain 3-5 questions based on those found in any previous Reading or Review Quiz.
* **Work on completing the assigned Lab (L) (started in class) and work by yourself on the assigned Homework Problem Set (H).** Submit your finished problems to Canvas as directed in the assignment handout.
* **Prepare for the next class's Lab (L) and Homework Set (H).** Do this by **reviewing the Reading Lecture Slides, doing** **the Assigned Readings, watching the posted Reading Lecture Videos, and taking the assigned Reading Quizzes.**
* **This Schedule will be modified as needed, including details** on assigned Labs and Homework. Updated versions will be posted to Canvas and announced in class.

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| Class # | Tues  Class  Date | Class Topics | Reading Assignments  (complete **before** class) | Labs (L) &  Homework (H) | |
|  |  | HTT***N*** refers to Chapter ***N*** in  "How to Think Like a Computer Scientist in Python":  <https://runestone.academy/runestone/books/published/thinkcspy/index.html> | Suggested: review posted slides, watch posted  Reading Lecture videos, run posted code in PyCharm | Blue shading  => Past classes | Yellow shading  => Next class | Blue shading  => Next class |
| 1 | 9/4 | ***Course Introductions and Mechanics***  ***Demo & Practice****: The Book's Website*  ***Demo & Practice****: Installing & Running Anaconda Python*  ***Demo & Practice****: PyCharm, a Python Integrated Development Environment (IDE)*  ***HTT1*** *- "General Introduction"*  ***HTT2*** *- "Simple Python Data"* | ---- | **L1 -** Lab 1: *Beginning Python*  **H1 -** Homework Problem Set 1: *HTT2* | |
| 2 | 9/11 | ***HTT4*** *- Python Turtle Graphics* | HTT1 all  HTT2 all  HTT4 all | **L2 -** *Turtles and Looping*  **H2 -** *HTT4* | |
| 3 | 9/18 | ***HTT3*** *- "Debugging Interlude 1"* ***Appendix*** *- "Debugging"*  ***Extra Topic****: Using the PyCharm Debugger*  ***HTT5*** *- "Python Modules"* | HTT3 all  Debugging Appendix  HTT5 all | **L3** - *Debugging and Modules*  **H3** *- HTT3 & HTT5* | |
| 4 | 9/25 | ***HTT6*** *- "Functions"****: start***  ***Extra Topic:*** *Unit Testing with* ***PyTest*** | HTT 6.1 - 6.5 | **L4** - *Functions 1 & Unit Testing*  **H4** *- HTT6 part 1 & Unit Testing* | |
| 5 | 10/2 | ***HTT6*** *- "Functions"****: finish***  ***HTT7*** *- "Selection"* | HTT 6.6 - 6.12  HTT7 all | **L5** - *Functions 2, Selection*  **H5** *- HTT6 part 2 & HTT7* | |
| 6 | 10/9 | ***Demo & Practice****: IPython and Jupyter Notebooks*  ***HTT8*** *- "More About Iteration"*  ***HTT9 -*** *"Strings"****: start*** | HTT8 all  HTT 9.1 - 9.12 | **L6** - *IPython/Jupyter; More on Iteration, Strings 1*  **H6** *- HTT8 and HTT9* | |
| 7 | 10/16 | ***HTT9 -*** *"Strings"****: finish***  ***HTT10 -*** *"Lists"****: start*** | HTT 9.5.1, 9.13 - 9.21 HTT 10.1 - 10.12 | **L7** - *Strings 2 and Lists*  ***Final Project Out w/ Phases:***  ***FP1 Proposals,   FP2*** ***Requirements & Deliverables,   FP3 Project Video,   FP4 Elevator Speech*** | |
| 8 | 10/23 | ***HTT10 -*** *"Lists"****: finish***  ***HTT11 -*** *"Files"* | HTT 10.13 - 10.29  HTT11 all | **L8** - *Lists 2 and Files* **H7** *- HTT9, HTT10 and HTT11* | |
| 9 | 10/30 | ***HTT12 -*** *"Dictionaries"*  ***HTT13 -*** *"Exceptions"* | HTT12 all  HTT13 all | ***Final Project: FP1 Proposals Due* L9** *- Dictionaries and Exceptions*  **H8** *- HTT12 and HTT13* | |
| 10 | 11/6 | ***HTT17 -*** *"Classes and Objects: The Basics" (****HTT16*** *in previous edition)*  **In-Class Review Quiz 1 (iRvQ1)** on paper in class | HTT17 all | **L10** *- Classes and Objects* | |
| 11 | 11/13 | ***HTT16 -*** *"Recursion" (****HTT15*** *in previous edition)*  ***Extra Topic:*** *Functional Python Programming* | HTT16 all | **L11** *- Recursion and Functional Python* | |
| 12 | 11/20 | ***Extra Topic:*** *Introduction to NumPy* | --- |  | |
| X | 11/27 | ***Thanksgiving Eve Holiday: No Class!*** |  |  | |
| 13 | 12/4 | ***Extra Topic:*** *Introduction to Pandas & Matplotlib*  **In-Class Review Quiz 2 (iRvQ2)** on paper in class | --- |  | |
| 14 | 12/11 | ***Final Course Project  "Elevator Speech" Presentations*** |  | ***Final Project: FP2*** ***Requirements & Deliverables***  ***FP3 Project Video  FP4 Elevator Speech***  ***all Due*** | |