CSE10102 & CDT30020 - Elements of Computing II

Spring 2020

Instructor: Dr. Corey Pennycuff
Email: cpennycu@nd.edu

Class Meeting: Mo & We, 3:30PM - 4:45PM
129 DeBartolo Hall

Office Hours: See Course Website
TA Office Hours: See Course Website
382 Fitzpatrick, or by appointment

Course Description

CSE 10102/CDT 30020 is the second course in the core programming sequence in the Computing & Digital Technologies Minor. Building on your prior experience with the Python programming language, you will explore advanced computer usage such as the command line interface and various development environments. Through lectures and projects, you will work on assignments that reinforce your skills in finding and sanitizing datasets, analyzing that data, and producing results that may be reported on and easily consumed by those not familiar with the dataset.

This semester we will introduce topics such as SQL, advanced Python with Pandas, and some HTML & CSS.

Organization

This course is taught through in-class lectures as well as through online supplementary materials that may be provided from time to time. This class will also utilize online forums when necessary, to provide for inter-student communication, peer help, and other announcements.

Course Objectives

Upon completing the course, the student will be able to do the following:

1. Use common command-line interface commands for running programs and manipulating files.

2. Use command-line editors and/or GUI IDEs to write scripts, rather than Jupyter Notebooks, which was used in the preceding semester.

3. Sanitize data from a variety of source formats.

4. Properly organize code into modules by function.

5. Use 3rd-Party libraries as needed within your codebase.

6. Interface with databases and other similar types of services to process data.

7. Perform explanatory analysis on various datasets to understand and characterize the data beyond what is superficially obvious.

8. Report on your discoveries with insightful visualization of the results.
General Course Topics

1. Command-line usage and Python outside of Jupyter (in modules)
2. Databases
3. Pandas
4. HTML/CSS and Python as a web server

Text and Required Supplies/Resources

- You must have computer capable of installing and running Python. Valid examples would be a laptop running Windows 10 and the Windows Subsystem for Linux (WSL) installed, Mac OS 10.14 "Mojave" or Ubuntu 16.04. These are examples, not minimum requirements. It is only required that Python can run natively on your laptop, and that you have a Unix-like command line interface.

- There is no required textbook. The following books are recommended, and may be downloaded from the author:
  - The Linux Command Line http://linuxcommand.org/tlcl.php
  - Automate the Boring Stuff with Python https://automatetheboringstuff.com/

- Online resources as required.

- The course website may be found from the Instructor’s website https://nd.edu/~cpennycu.

Grading Plan

- Grade composition:  
  - Homework — 40%
  - Projects — 40%
  - Exams — 20%

- Projects may comprise multiple graded assignments (e.g. milestone reports, etc.).

- Grades are calculated as the percentage of earned points out of the total possible points in that grouping.

- Extra Credit may be assigned from time to time at the discretion of the Instructor.

Classroom Rules of Conduct

1. Use of electronics are permitted during lectures, providing that their use is related to the lecture subject and that it is not distracting to other students.

2. Homework is due at the beginning of class on the stated due date, unless otherwise indicated.

3. Late work will be accepted with the following provisions:
   
   (a) Assignments submitted late will be subject to a minimum 10% grade deduction.
   
   (b) The grade deduction increases an additional 10% each 24-hour period (e.g. 10% the first day, 20% the second day, etc.)
   
   (c) A late assignment will only be accepted up to a maximum of 4 days (96 hours).
(d) If a solution to some part of the assignment is discussed in the lectures before a student submits a late assignment, then no credit will be given for any portion of the assignment whose solutions were discussed.

4. All work that a student submits must be his or her own, original solution to the problem or assignment. Any exceptions to this rule will be explicitly stated.

5. All work must conform to the CSE specific application of the Honor Code (https://cse.nd.edu/undergraduates/honor-code).

6. Any and all plagiarism, cheating, unauthorized answer-sharing, or any other form of academic dishonesty will be strictly dealt with in accordance with the Notre Dame Academic Code of Honor (http://honorcode.nd.edu/).

Classroom Recording Notification

This course may or may not be recorded using Panopto. This system allows us to automatically record and distribute lectures to you in a secure environment. You can watch these recordings on your computer, tablet, or smartphone. In the course in Sakai, look for the “Panopto” tool on the left hand side of the course.

Because we might be recording in the classroom, your questions and comments may be recorded. Recordings typically only capture the front of the classroom, but if you have any concerns about your voice or image being recorded please speak to me to discuss your concerns. Except for faculty and staff who require access, no content will be shared with individuals outside of your course without your permission.

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