Honors 1000: Productive Data Manipulation in Python and SQL
Mondays 9.30 to 10.20, Online on WebEx

Fall 2020

Course Syllabus

Instructor

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Office: Room 629, 1 Park Place
Office Hours: 11 to Noon on Mondays; or by appointment (send me an email)

Course Description

An introduction to the basics of creating and maintaining data and generating reports from data using computer programming and relational databases. Students will learn how to write code in Python and SQL to perform data manipulation tasks to increase productivity. Basics of Data Science practices and approaches will be covered.

Learning Outcomes

1. The student will be able to write short Python programs to read data from a variety of formats, perform calculations and generate output. The student will also be able to compute various statistical measures, aggregations, and summaries of data as well as visualize the data.
2. The student will be able to create and maintain a relational database in MySQL. They will also be able to write SQL queries to extract relevant data from the database and perform analysis as well as generate reports.

College to Career Competencies

The course addresses the following identified competencies:

Critical Thinking/Problem Solving:
    Mine and analyze data, Analyze visual data

Teamwork/Collaboration
    Collaborate in team-project, participate in collaborative writing

Digital Technology
    Design creative digital solutions, translate data

Prerequisite

None

Textbooks and Course Materials

There will be no required textbook. We will use the following online tutorials and tools from the Web:

1. https://www.learnpython.org/
2. https://www.tutorialspoint.com/sql/index.htm
3. https://pypi.org/project/beautifulsoup4/

Schedule

Weeks 1-5 (Python)

       Python Basics – Literals, Variables, Expressions, Assignment Statement
       Python Data Types/Structures - Strings, Lists, Sets, and Dictionaries
       Conditional Statement, For Loop
       Functions
       BeautifulSoup (HTML/XML Scraper Library)
       2 programming assignments

Weeks 6-10 (Relational Databases and SQL)

       Relational Database Concepts
       SQL – Data Definition (create table/drop table)
       SQL – Data Manipulation (insert/delete/update)
       SQL – Querying
       MySQL
       2 assignments

Weeks 11-14 (Projects and Presentations)

       Groups of 2-4

Participate in the Life of the Honors College Attend co-curricular programs offered in the Honors College, for example our Lunch and Learn, Dine and Discover, and Research Essentials series, as well as guest speakers and co-sponsor events. Submit a short one or two paragraph summaries of what you learned in at least 3 events.

Grading

4 programming assignments	40 points
Project (groups of 2 to 4)	40 points
Attendance/Participation	20 points (10 for attendance and 10 for Summaries)

S Grade: >= 80
U Grade: < 80