CMP 464: Topics in Computer Science

Lehman College, City University of New York
Fall 2020

Section	CMP 464 -02	**Instructor**	Liang Zhao
Class Hours	M/W 11:00 AM – 12:40 PM	**Email**	Liang.Zhao1@lehman.cuny.edu
Room	Zoom 959 8450 6679 Passcode: 464788	**Office**	GI 101A
Course Topics	Data Processing and Analysis	**Office Hours**	M/W after class

Course Rationale

Data is the foundation of the digital age. Many industries generate massive data sets on a daily basis, and thus are in urgent need of professionals who can explore the data sets using data processing tools and present relevant characteristics in an explicit and understandable way. Mastering modern data analysis tools and techniques is crucial for Computer Science students to meet the requirement of the fast-growing data science and analytics job market.

Course Description

This course aims at using multiple hands-on projects to:
1. introduce data handling tools and techniques,
2. practice various ways of extracting and presenting knowledge and insights about the data,
3. help students become familiar with the computational thinking process that establishes links between a concrete problem and relevant data sets.

Main Topics:
1. A fast-paced introduction to Python programming
2. Arrays and vectorized computations with NumPy and SciPy
3. Data cleaning and processing with Pandas
4. Plotting and visualization with Matplotlib
5. Interacting with Data from Web or Databases
6. Managing time series data, images, texts
7. Introduction to Python modeling libraries
8. Data visualization with Tableau
9. Big data analytics with Apache Spark

Students are expected to learn the above topics by completing weekly assignments on analyzing real-world data sets. Final grades are given based on homework assignments, in-class quizzes, and project presentations.

Prerequisites: CMP 326 Programming Methods II, CMP 232 Discrete Mathematics, or with permission of the instructor.

Textbook:
Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython 2nd Edition
by Wes McKinney. Publisher: O'Reilly. ISBN-13: 978-1491957660

Recommended preparation: Python programming, statistics.

Grading Policy

Homework – 20%
Blackboard tests – 20%
Midterm Project – 30%
Final Project – 30%

Online Teaching: Students are expected to attend Zoom meetings during class time. Office hours will be held in the same meeting room right after each class. Online proctoring may be used for tests. All lectures will be recorded for students to view later. Please read the following announcement carefully:

Students who participate in this class with their camera on or use a profile image are agreeing to have their video or image recorded solely for the purpose of creating a record for students enrolled in the class to refer to, including those enrolled students who are unable to attend live. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live.

Expectations: Students are expected to learn the material covered in class, the material in the textbook and other assigned reading. Completing homework is an essential part of the learning experience. Students should review topics from prior courses as needed using old notes and books

Honor Code: You are encouraged to work together on the overall design of the programs and homework. However, for specific programs and homework assignments, all work must be your own. You are responsible for knowing and following Lehman's academic integrity code (available from the Undergraduate Bulletin, Graduate Bulletin, Office of Academic Standards and Evaluations, or the Smart Catalog). All incidents of cheating will be reported to the Vice President of Student Affairs.

Email: We will be communicating with you on a regular basis throughout the semester using Blackboard and the email address you provide us on day 1 of this course. You must check that email address on a regular basis. **There will be no acceptable excuse for missing an email announcement.**

Accommodating Disabilities:
Lehman College is committed to providing access to all programs and curricula to all students. Students with disabilities who may require accommodations are encouraged to register with the Office of Student Disability Services located in Shuster Hall, Room 238. http://www.lehman.edu/student-disability-services
Telephone: 718-960-8441 Email: disability.services@lehman.cuny.edu